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Ana Petelin, Matej Plevnik, Urška Čeklić,
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Zdravje otrok in mladostnikov

Health of children and adolescents

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Contents

The impact of social media on the children mental health

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Abstract

Introduction: Usage of social media among people is increasing due to the fast evolution of technology and profound changes between peoples communication. Social media is being used increasingly by adolescents and children. Social media, beside positive effects can pose risks for vulnerable population groups, such as children and adolescents. *Methods:* A descriptive research method with a critical review of Slovenian and English professional and scientific literature was performed, using the CINAHL, Medline, ERIC, Google schoolar, Cochrane library and the COBIB.SI database. Literature inclusion criteria were articles published between 2009 and 2019. We included only professional and scientific articles that analysed children up to the age of 18. *Results:* The results have shown the correlation between spending more time on online social networking and increased chances for self-harm behaviour, psychological distress and suicidal ideation, anxiety and mood changes, as well as development of depression. *Discussion and conclusion:* Use of social media in childhood and/or in adolescence can both have, positive or negative effects on future mental well-being. Health care system should emphasize the development of a safety use of social media and ensure effective mental health support to those who need it. There is a lack of evidence regarding this topic present, and further high-quality research is needed.

Keywords: adolescents, social network, mental disorder, children health

Introduction

The fast evolution of technology is leading to an increase use of internet and social media among people, from childhood to adults (Bozzola et al., 2018). Online social networking and social media (SM) caused profound changes in the way people communicate and interact, however it is unclear, whether some of

these changes may affect certain normal aspects of human behavior and cause psychiatric disorders (Pantic, 2014). Studies on adults have linked decreased self-esteem with SM use, and potentially more significant health effects with children (Richards et al., 2015).

There are many definition and concepts of SM. Most basic definition states that SM can be defined as ''a group of Internet based applications that allow the creation and exchange of user-generated content'' (Kaplan and Haenlein, 2010; Primack and Escobar-Viera, 2017).

SM is being used increasingly by children and young people. Although SM can have a positive impact on the health and well-being of children and young people, but it can pose risks for these vulnerable population groups (Richards et al., 2015). It allows to staying connected with friends and family, making new friends, sharing pictures and exchanging ideas etc. But at the same time can also become a risk to adolescents (O'Keeffe and Clarke-Pearson, 2011). There are documented risks and benefits of the use of digital technology and SM, range from affecting school performance, increasing loneliness and social anxiety, to enhancing communication and broadening social connections (Clifton et al., 2013), but can also cause profound psychosocial outcomes including depression, anxiety, sleep disturbances (Primack and Escobar-Viera, 2017), severe isolation, and suicide (Hinduja and Patchin, 2010).

The 2018 survey in the United States of America (USA) shows that a majority of Americans use Facebook and YouTube, but young adults and adolescents mostly use Snapchat and Instagram as the primary social media. The report states that around 88% of the young population uses social media of any form (Pew Research Center, 2018). The Statista (2018) reports that in USA 63% of teenagers, aged between 13-14 years, and 74% aged between 15-17 years are using Snapchat. In 2017 there were in total more than 45,6 milions Snapchat and 18,7 million Instagram users in USA aged under 17.

Methods

A descriptive research method with a critical review of Slovenian and English professional and scientific literature was performed using the Cumulative index to nursing and allied health literature - CINAHL, Medline, ERIC, Google schoolar, Cochrane library and the COBIB.SI database. The keywords with the use of Bool's operators AND and OR were: children, adolescent, youth, child, teenager, social media, social networking sites, Facebook, Instragram, Snapchat, Twitter, mental health, mental disorder. Literature inclusion criteria were articles published between 2009 and 2019, English or Slovenian language and appropriate content. We included only scientific articles, that analysed children up to the age of 18. We set a research question: "What is the impact of social media on children and adolescent mental health?"

Results

Based on the available literature we restricted our focus on 10 studies. Different methodologies were used, examining the link between use of SM and mental health of children and adolescent (Table 1).

Table 1: Overview of studies

Authors and year	*Purpose of research*	*Methodology*	*Results*
Aksha et al., 2018	Examine the role of online social networking on deliberate self-harm and suicidality in adolescents	A systematic literature review	Adolescents who spent more time on online social networking have a greater exposure and engagement in self-harm behavior. They also have an increase in psychological distress and suicidal ideation.
Elmquist and McLaughlin, 2017	The use of SM, specifically in adolescents struggling with mental health problems.	A systematic literature review	There are positive and negative impacts of SM on mental health.
Hugues et al., 2015	Association between time spent on social networking sites and mental health among children and adolescents.	Cross-sectional study (n=753)	Students with poor mental health are greater users of Social networking sites (SNS). The youth who reported use of SNS for more than 2 hours per day have poor self-rated mental health, psychological distress, suicidal ideation, or unmet need for mental health support.
Hyun-soo Kim, 2017	Associations between Internet-based SM and psychological well-being of adolescents.	Longitudinal study (Cohort 1 n=3449, Cohort 2 n=2844)	There is a strong and negative relationship between online activities and self-reported mental health and suicidal ideation among students.
Memon et al., 2018	Evidence of the influence of SM use on adolescent deliberate self-harm and suicidality	A systematic literature review	Greater time spent on online social networking leads to greater exposure and engagement in self-harm behaviour.
O'Reilly et al., 2018	Effect of SM on adolescents	Qualitative study, focus groups of adolescents (n=54)	SM was perceived as a threat to mental wellbeing, causing mood and anxiety disorders for some adolescents
Pantic et al., 2012	Rlationship between social networking and depression indicators in adolescent population	Cross-sectional study (n=160)	Students who spent time on online social networking in high school are related to the risk for depression

Authors and year	*Purpose of research*	*Methodology*	*Results*
Richards et al., 2015	Te impact of SM on the health of children and young people.	Literature review	Some benefits were observed in the well-being and self-esteem category, but also potentially negative effects such as increased risk-taking behaviour, cyberbullying, depression, exclusion of minority groups and in some reduced self-image and self-esteem
Selfhout et al., 2009	Asociation of time spent on internet for communication purposes versus non-communication purposes with depression and social anxiety.	Longitudinal study (n=307)	Adolescents who perceive internet use for communication purposes, predicted less depression, whereas Internet use for non-communication purposes predicted more depression and more social anxiety.
Woods and Scott, 2016	Effect of SM on sleep quality, self-esteem, anxiety and depression.	Qualitative study, use of questionnaires on secondary school pupils (n=467)	Students who use SM more experienced poorer sleep quality, lower self-esteem and higher levels of anxiety and depression

Discussion

SM use in children or adolescents can have positive or negative effects on their mental well-being (Selfhout et al., 2009; Daine et al., 2013; Richards et al., 2015; Elmquist and McLaughlin, 2017).

The positive effects are reported in higher self-esteem and well-being (Selfhout et al., 2009; Richards et al., 2015), positive content (i.e. for entertainment, humor, content creation) or for social connection (Radovic et al., 2017). A research (Lerman et al., 2017) that was targeting Facebook youth depression support groups found that this may represent a positive, safe and non-judgmental environment that allows self-disclosure and connections between like-minded youth.

However, most of the evidence shows, that usage of SM in general has a negative impact on children and adolescent mental health. High internet use and internet addiction appear to have a large negative influence (Marchant et al., 2017). Many studies have shown negative use of SM and evidence that greater time spent on online social networking leads of greater exposure and engagement in self-harm behaviour (Hugues et al., 2015; Aksha et al., 2018; Memon et al., 2018), increased self-risk behaviour (Richards et al., 2015; Hyun-soo Kim, 2016), increased levels of anxiety and depression (Pantic et al., 2012; Hugues et al., 2015; Richards et al., 2015; Primack and Escobar-Viera, 2017; O'Reilly et al., 2018) and poorer sleep quality (Woods and Scott, 2016).

Even though SM usage among children can have negative consequences, it also matters to which purpose social media is used, e.g. for communication on non-communication purposes (Selfhout et al., 2009; Radovic et al., 2017). Social networking sites allow individuals to communicate with others regarding specific topics of interest. These interactions have also taken a therapeutic form for adolescents and young adults seeking practical and emotional support on the Internet (Messina and Iwasaki, 2011). Professional health organisations should emphasize the development of a safety use of social media and ensure effective mental health support to those who need it (Clifton et al., 2013). We also realised, that there is not enough high-quality research available, particularly regarding the impact of social media on younger children, and subsequently there is a lack of guidance for parents and teachers of the appropriate use of social media with children (Richards et al., 2015; Hoge et al., 2018).

Conclusions

Social media use is very prominent among children, young people and adolescents and can have positive and negative effects of their mental health. Most commonly related mental health issues are anxiety, depression, and self-harm behaviour. Whether a child is at risk for these issues depends on different factors, such as time spent on social media, child perception on what social media is for and pre-existing mental health issues. As children are more and more present on various social media platforms, such as Facebook, Instagram, Snapchat, and others, more research is needed about the long term effects on their mental health. There is still insufficient evidence about the impact of social media usage on children mental health and related issues and further high-quality research is needed.

References

AKSHA, M.M., SHIVA, G.S., SATYAJIT, S.M., SHAILESH, J., 2018. The role of online social networking on deliberate self-harm and suicidality in adolescents: A systematized review of literature. *Indian journal of psychiatry*, vol. 60, no. 4. pp. 384–392.

BOZZOLA, E., SPINA, G., RUGGIERO, M., MERNO, L., AGOSTINIANI, R., BOZZOLA, M., CORSELLO, G., VILLANI, A., 2018. Media devices in pre-school children: the recommendations of the Italian pediatric society. *Italian journal of pediatrics,* vol. 44, no. 1. pp. 1–5.

CLIFTON, A., GOODALL, D., BAN, S., BIRKS, E., 2013. New perspectives on the contribution of digital technology and social media use to improve the mental wellbeing of children and young people: a state-of-the-art review. *Neonatal, paediatric and child health nursing,* vol. 16, no. 1, pp. 19–26.

DAINE, K., HAWTON, K., SINGARAVELU, V., STEWART, A., SIMKIN, S., MONTGOMERY, P., 2013. The power of the web: A systematic review of

studies of the influence of the internet on self-harm and suicide in young people. *PloS one,* vol. 8. no. 10, pp, e77555.

ELMQUIST, D.L., MCLAUGHLIN, C.L., 2017. Social media use among adolescents coping with mental health. *Contemporary school psychology,* vol. 22, no. 4, pp. 503–511.

HINDUJA, S., PATCHIN, J.W., 2010. Bullying, Cyberbullying, and suicide. *Archives of suicide research*, vol. 14, no. 3. pp. 206–221.

HOGE, E., BICKHAM, D., CANTOR, J., 2017. Digital media, anxiety, and depression in children. *Pediatrics,* vol. 140, no. 2. pp. 76–80.

HUGUES, S.K., ROSAMUND, F.L., 2015. Frequent use of social networking sites is associated with poor psychological functioning among children and adolescents. *Cyberpsychology, behavior and social networking*, vol. 18, no 7. pp. 380–385.

HYUN-SOO KIM H., 2017. The impact of online social networking on adolescent psychological well-being (WB): a population-level analysis of Korean school-aged children. *International journal of adolescence and youth*, vol. 22, no 3. pp 364–376.

KAPLAN, A.M., HAENLEIN, M., 2010. Users of the world, unite! The challenges and opportunities of social media. *Business Horizons,* vol. 53, pp. 59. 59–68.

LERMAN B.I., LEWIS S.P., LUMLEY M., GROGAN GJ., HUDSON CC., JOHNSON E., 2017. Teen depression groups on Facebook: a content analysis. Journal of adolescent research vol 32. no. 6. pp. 719–741.

MARCHANT A., HAWTON K., STEWART A., MONTGOMERY P., SINGAVARELU V., LLOYD K., PURDY N., DAINE K., JOHN A., 2017. A systematic review of the relationship between internet use, self-harm and suicidal behavior in young people: The good, the bad and the unknown. *Plos One* vol. 13, no. 3. pp. 1–26.

MEMON, A.M., SHARMA, S.G., MOHITE, S.S., JAIN, S., 2018. The role of online social networking on deliberate self-harm and suicidality in adolescents: A systematized review of literature. *Indian journal of psychiatry*, vol. 60, no. 4. pp. 384–392.

MESSINA, E.S., IWASAKI, Y., 2011. Internet use and self-injurious behaviors among adolescents and young adults: an interdisciplinary literature review and implications for health professionals. *Cyberpsychology, behavior and social networking,* vol. 14, no. 3. pp. 161–167.

O'KEEFFE, G.S., CLARKE-PEARSON, K., 2011. Clinical report-the impact of social media on children, adolescents, and families. *Pediatrics*, vol. 127, no. 4. pp. 800–804.

O'REILLY, M., DOGRA, N., WHITEMAN, N., HUGHES, J., ERUYAR, S., REILLY, P., 2018. Is social media bad for mental health and wellbeing?

Exploring the perspectives of adolescents. *Clinical child psychology and psychiatry*, vol. 23, no. 4. pp. 601–613.

PANTIC, I., 2014. Online social networking and mental health. *Cyberpsychology, behavior and social networking*, vol. 17, no. 10, pp. 652–657.

PANTIC, IG., DAMJANOVIC, A., TODOROVIC, J., TOPALOVIC, D., BOJOVIC-JOVIC, D., RISTIC, S., PANTIC, S., 2012. Association between online social networking and depression in high school students: behavioral physiology viewpoint. *Psychiatria Danubia,* vol. 24, no.1, pp. 90–93.

PEW RESEARCH CENTER, 2018. *Social Media Use in 2018* [online]. [viewed 11 March 2019]. Available from: http://www.pewinternet.org/2018/03/01/social-media-use-in-2018/

PRIMACK, B.A., ESCOBAR-VIERA, C.G., 2017. Social media as it interfaces with psychosocial development and mental illness in transitional age youth. *Child and adolescent psychiatric clinics of North America*, vol. 26, pp. 217–233.

RADOVIC, A., GMELIN, T., STEIN, B.D., MILLER, E., 2017. Depressed adolescents' positive and negative use of social media. *Journal of adolescence*, vol. 55, pp. 5–15.

RICHARDS, D., CALDWELL, P.H.Y., G.O, H., 2015. The impact of social media on the health of children and young people. *Journal of paediatrics and child health*, vol. 51, no. 12. pp. 1152–1157.

SELFHOUT, M.H.W., BRANJE, S.J.T., DELSING, M., TER BOGT, T.F.M., MEEUS, W.H.J., 2009. Different types of Internet use, depression, and social anxiety: The role of perceived friendship quality. *Journal of adolescence,* vol. 32, pp. 819–833.

STATISTA, 2018. *Percentage of teenagers in the United States who use Snapchat as of April 2018, by age group* [online]. [viewed 11 March 2019]. Available from: https://www.statista.com/statistics/419400/us-teen-snapchat-users-age-reach/

WOODS, H., C., SCOTT, H., 2016. #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of adolescence*, vol. 51. pp. 41–49.

Presentation of the programme for family treatment of the reduction of obesity

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Abstract

Purpose: The new intervention Programme for Family Treatment for Reducing Obesity systematically recognizes, and treats the masters of over-nutrition in obesity of children, and children with reduced physical capacity. *Problem presentation:* The programme is intended for children of the 3rd grade in adolescents of 6th grade with obesity signs, and their parents. The paediatrician was the selected as the pilot programme leader of the project, while the co-ordination of activities among the team members was taken over by a nurse. The dietitian planned the content of the workshops according to the Family Treatment Manual to reduce the risk of obesity. The psychologists played an important role in contributing information successfully to families in their everyday life, which supported the dietitian's role. The psychologist's task in the team was primarily motivational. Kinesiologist was to describe the amount of activity and the degree of physical development. The starting points of the physical activity plan were also defined, covering the type, intensity, duration and frequency of activities. *Findings:* The enforcement of the programme in a regular implementation would be a good contribution to the preservation and strengthening of the health of children and adolescents, which would reduce the risk.
Key words: family treatment, obesity, multidisciplinary team, health promotion

Introduction

The Health Centre Basic protection Nova Gorica is among the 25 selected health centres which were selected in a public tender for upgrading the development of preventive programmes. To this end, the Centre for Health Promotion (hereinafter referred to as CKZ) was set up as an organizational, functional and content upgrade to the system, which has already been established by

the health and education centre. Within the CKZ, the Health Promotion Programme (hereinafter referred to as PKZ) was organized. It is intended as a non-medication treatment for people with a high risk of chronic illness or those who have already become ill with chronic non-contagious diseases. As a great achievement, in the PKZ a branch functions in the field of the implementation of treatment and prevention activities for children and adolescents. This new intervention is called the Programme for Family Treatment for Reducing Obesity. It systematically recognizes, and masters the over-nutrition with obese children, and children with a reduced physical capacity (Dravec et al., 2017). Blaž Kovač (2016, pp. 18) states »The aim of the programme is to teach children and their parents how to eat healthily and to encourage to activity, which will have a long – term effect on weight management.«

The programme is intended for children of the 3rd grade in adolescents of 6th grade with obesity signs, and their parents. The main purpose of the program is to identify vulnerable children from selected primary schools who are involved in the project, to support them, and promote a lifestyle change that is crucial to prevent the onset of illness. In order to treat children individually and wholly, the involved team of specialists consists of a paediatrician, a nurse, a psychologist, a dietitian and a kinesiologist (Dravec et al., 2017).

Structured section

The pilot programme leader was supposed to be a selected project paediatrician. In our tenders, it was not possible to obtain it within our institution, so the work was distributed among three regular paediatricians in the institution. As a team we decided unanimously that coordinating and coordinating activities among the team members would be taken over by a graduate nurse. The project did not foresee such an important role of a nurse as it actually showed during the course of the programme. The nurse represented the coordinator of the programme and thus ensured teaming with paediatricians, planning and coordinating activities (meetings, team meetings, check-ups, individual consultations with team members). The coordinator ensured that the work was carried out in accordance with the timetable, and she took care of connecting parents and children with project paediatricians and team members. The nurse was involved in workshops together with a dietitian, and her important role was shown in inviting and carrying out control checks together with paediatricians, both for responsive and non-responsive children who did not agree with the decision, whose monitoring was scheduled for three months. According to the joint agreement, individual consultations with the children and their parents were carried out before the check-ups, in which the nurse also performed anthropometric measurements (analysis of the body composition and bandwidth). With the help of a structured motivational talk, team members learned more about their current eating and activity habits, shaped their goals together, and motivated them to change them. The nurse ensured that the controls of children and parents together with the paediatrician were successful by collect-

ing the acquired information and observations from individual consultations with the team members, as well as from individual meetings, the objectives set and the evaluated results of the measurements of the child and parents. On team meetings, we passed these bits of information (dietitian, psychologist and kinesiologist) to project paediatricians. With the information obtained, project paediatricians were able to focus more easily on the area of change - either their physical or eating habits - during the inspection.

The role of dietitian was to raise awareness of the current eating habits and behaviour of children and their parents, and a gradual change in them. Children mostly choose unhealthy food; they eat too little fish and vegetables. Most of the days they eat irregularly; they leave out breakfast and consume sweet drinks too often. Their meals mainly consist of energy rich and nutrient poor food (Kotnik et al., 2016). In order to facilitate awareness of life habits (nutrition, exercise, leisure, use of radios, well-being), the team members made a diary to fill in (covering the field of eating, movement and well-being) by the families during the first few meetings. The dietitian planned the content of the workshops according to the Family Treatment Manual to reduce obesity due to obesity. The contents of the workshops included learning about the basics of a balanced diet, meal planning, food preparation, learning about product declarations (Truden Dobrin et al., 2019). The mentioned content was given to both parents and children, the difference was only in the way the content was delivered to the target population (Blaž Kovač et al., 2016). The psychologists played an important role in the fact that the families contributed successfully to their everyday life, which supported the content of the dietitian's work with the content of their meetings. For this purpose, their meetings were exchanged weekly for both children and parents. The dietitian helped us with the use of food designs, food packaging, food cards, and various work sheets when submitting the mentioned contents. She supported these contents with practical demonstrations (designing a food circle, preparing a healthy plate, showing the amount of sugar, fat and salt in individual foods). The acquired information and knowledge was used together with children to visit the store, where we compared each other with selected products from the shopping lists of children, examined the composition of the selected products, and made the children aware of the importance of reading the declarations. The dietitian thus took the transfer of theory into practice. Furthermore, the dietitian offered individual counselling to parents of children who were further motivated to change their dietary habits. Also, the dietitian accompanied some children and parents who did not want to get involved in the programme, but wanted to have only individual consultations with her.

The psychologist's task in the team was primarily motivational. By teaching and demonstrating some useful behavioural cognitive motivation techniques, he helped develop the motivation for change and self-regulation in both the child and the whole family. The whole team brought the concept of health closer to parents and children and gradually, through individual group

meetings, strengthened the sense of individual responsibility for it. The kinesiologist and dietitian helped the participants to raise awareness of unhealthy eating and activity habits, and the task of the psychologist was to support the kinesiologist and dietitian in helping to set goals.

When introducing changes, small steps must be taken. As the indivudal should first begin to change adttitude, the way of thinking and only then his behaviour (Kotnik et al., 2016). The motivation was built by the participants in raising awareness of the benefits or advantages that would be brought about by some concrete change. The goals and the reasons for the change were recorded on the motivation cards and by strengthening positive attitude. The psychologist approached the children and their parents and explained the behavioural cognitive model of human activity itself. How a person responds and behaves depends on how he feels in a situation, what he experiences and how he thinks. A healthy lifestyle is also a concern for mental health, so the psychologist has taught children and parents some basic relaxation techniques. For example, a breathing technique helps to cope with a physical reaction to a stressful situation and, consequently, it is easier for a person to control thoughts, emotions, and behaviour. The visualization technique helps to divert thoughts, but at the same time it offers an opportunity to train stop-technique, whereby an individual overcomes temptation in a hypothetical imagined situation. In the end, the psychologist also emphasizes the importance of positive self-help, with children and parents recognizing important critical situations themselves and forming positive claims and encouraging thoughts, which they also write down on the motivation card and consolidate them with regular reading. During the entire intervention, the psychologist is paying attention to the occurrence of emotional and behavioural problems which, due to the stigmatization of obesity, are a frequent and expected companion of overweight. At the same time, she presents to her parents the importance of healthy education based on emotional support and clear rules. When changing behavioural patterns, which is definitely a demanding task for the child, it is important that the family has been recognized and praised for the slightest progress towards the set goals. Changing the lifestyle is a long run, so the psychologist encourages the participants to make the steps small, but reliable.

An active lifestyle is the key factor in the child motor skills performance, such as muscular fitness, aerobic fitness and motor intelligence (Kotnik et al., 2016). Using the data of a motor history, the kinesiologist described the activity habits and degree of motor development according to the age of the children. At the individual interview, together with the family, they outlined the goals that they will try to achieve through the duration of the project. The starting points of the physical activity plan were also defined, covering the type, intensity, duration and frequency of activities. A smart bracelet was proven to be an excellent motivational tool to monitor daily and unorganized physical activity. The training centre was held twice a week at the Health Promotion Centre. In addition to regular treatment at the gym, they offered an entire period of out-

door exercise to the entire family, which brought parents and other close relatives up to lifestyle changes. For the critical period at the time of the discussion, the team marked the summer holidays, and together with local societies organized the Day of Activities, thus trying to provide a sufficient measure of physical activity even in the period when various trainings and circles were not in the forefront. In addition to the regular treatment in the gym, we offered an entire period of outdoor exercise for the whole family, which brought parents and other close relatives up to lifestyle changes. The enforcement of the programme in a regular implementation would be a good contribution to the preservation and strengthening of the health of children and adolescents, which would reduce the risk of developing chronic non-contagious diseases.

Conclusion

Obesity in childhood can have many consequences in the later life of an individual. Such as psychological, social and also an increased risk of cardio-vascular diseases (Gabrijelčič Blenkuš and Robnik, 2016). The enforcement of the programme in a regular implementation would be a good contribution to the preservation and strengthening of the health of children and adolescents, which would reduce the risk.

References

BLAŽ KOVAČ, M., LIČER, Š., MARKIČ, V., MIŠIČ, G., PALKOVIČ, V., PELC, J., POLIČNIK, R., STOPAR OBREZA, M., SCHWEIGER NEMANIČ, J., ŠEŠUM, A., et. al., 2016. Družinska obravnava debelosti otrok in mladostnikov. 1 st ed. Ljubljana: Nacionalni inštitut za javno zdravje.

DRAVEC, S., DRGLIN, Z., FARKAŠ LAINŠČAK, J., HORVAT, M., HUBER, I., KONEC JURIČIČ, N., MAUČEC ZAKOTNIK, J., MIHEV PONIKVAR, B., POLIČNIK, R., PRIBAKOVIĆ BRINOVEC, R. et. al., 2017. Nadgradnja in razvoj preventivnih programov ter njihovo izvajanje v primarnem zdravstvenem varstvu in lokalnih skupnostih [online]. Nacionalni inštitut za javno zdravje. [viewed 6 May 2019]. available from: https://www.nijz.si/sites/www.nijz.si/files/uploaded/vsebinska_izhodisca_za_izvajanje_op_nadgradnja_in_razvoj_preventivnih_programov.pdf

GABRIJELČIČ BLENKUŠ, M., ROBNIK, M., 2016. Prekomerna prehranjenost in debelost pri otrocih in mladostnikih v Sloveniji II [online]. Nacionalni inštitut za javno zdravje. [viewed 15 July 2019]. available from: https://www.nijz.si/sites/www.nijz.si/files/uploaded/debelost_pri_0-m_daljsa_spletna_avg2016_final_01082016.pdf

KOTNIK, P., BIGEC, M., FIDLER MIS, N., FAJDIGA TURK, V., GREGORIČ, M., KLEMENČIČ, S., RUTAR, M., STREL, J., STARC, G., ŠIRCA ČAMPA, A., et al., 2016. Preventivni program za otroke in mladostnike – prepoznava in obravnava čezmerne hranjenosti in debelosti [online]. Nacionalni inštitut za javno zdravje. [viewed 15 July 2019]. available from:

http://www.skupajzazdravje.si/media/preventivni.program.om_.prepoznava.in.obravnava.cezmerne.prehranjenosti.in.debelosti.pdf

TRUDEN DOBRIN, P., JURAK, G., KOTNIK, P., KLEMENČIČ, S., BENEDIK, E., VOGRIN, B., STEFANOVA KRALJ, V., MIŠIČ, G., PUSTIVŠEK, S., et. al., 2019. Družinska obravnava za zmanjševanje ogroženosti zaradi debelosti in zmanjšane telesne zmogljivosti. 1st ed. Ljubljana: Nacionalni inštitut za javno zdravje.

The influence of gut microbiota and probiotics on children health

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Abstract

Problem presentation. Gut microbiota is a complex ecosystem of more than 10^{14} microorganisms in a symbiotic relationship with the host and has an important protective, structural and metabolic role. The intestinal mucosa is colonised immediately after birth by microorganisms originating mainly from mother's gut, vaginal tract and skin. The composition of microbiota is shaped during the early childhood by the age of three and it depends on different factors like genetics, mode of delivery, breastfeeding, weaning, and exposure to environmental bacteria, medication and diet. Recent studies have shown that the gut microbiota composition established during the early period of live plays an important role in the development and physiology of the host immune system and affects health and disease in later life. *Purpose.* We want to present the functioning and influence of the microbiota on the development and health of the child during the period of growing up and later in adulthood. *Conclusions.* The gut microbiota homeostasis is influenced by a wide range of factors that can cause a so-called state of dysbiosis leading to health disorders or diseases, including obesity, diabetes and allergies. Due to a close relationship between gut microbiota, health, and disease there is an increased interest in probiotics with the aim of different disease prevention and treatment. The use of probiotic food or/and daily probiotic supplements could therefore favorably influence the early stages of children physical and mental development.

Key words: gut microbiota, children, health, probiotics

Introduction

The human gastrointestinal (GI) tract is inhabited by complex microbial communities, which can significantly influence the well-being of the host. The so-

called gut microbiota has a great impact on nutrient degradation and adsorption; defense against pathogen microorganisms; immune system; affects gut health and can greatly influence the functionality and pathophysiology of several organs that are anatomically distant from the GI tract (Clemente et al., 2012). The first years of the child's life are the most important period for the gut microbiota development and is greatly influenced by pregnancy (maternal microbiota, health status, lifestyle), mode of delivery and infancy (genetics, infant diet, family environment, antibiotic treatment) factors (Rodríguez et al., 2015). In the past years, the composition and role of the gut microbiota have been studied thoroughly. Although there have been over 50 bacterial phyla described to date more than 90% of gut bacteria belong to *Bacteroidetes* and *Firmicutes*. *Firmicutes* phyla mainly include *Ruminococcus*, *Clostridium*, *Lactobacillus*, *Eubacterium*, *Faecalibacterium* and *Roseburia*, while in *Bacteroides* phyla mainly *Prevotella* and *Xylanibacter* genera are present. However, the minority of species belong to phyla such as *Actinobacteria* and *Proteobacteria* (Arumugam et al., 2011).

The abundance and diversity of human gut microbiota have critical roles in the maintenance of human health. Various epidemiological studies have shown a correlation between factors disrupting the gut microbiota during childhood on one hand with immune and metabolic disorders later in life on the other (Eggesbo et al., 2003; Huh et al., 2012; Sevelsted et al., 2015). Many experimental data support long-term health benefits of infant gut microbiota and its role in health and neurodevelopment (Relman, 2012). These findings have stimulated the development of strategies to influence the composition, and activities of the infant microbiota e.g. by the use of nutraceutical products (e.g., probiotics and/or prebiotics).

Development of the infant gut microbiota

It has widely been accepted that the microbial colonization of the newborn starts during and after birth. Nevertheless, based on the studies of healthy newborns the bacteria have been detected in placental tissue (Aagaard et al., 2014) and in meconium (Gosalbes et al., 2013). This finding increases the evidence of early microbial contact during the antenatal period. Exposure of the fetal environment to microbial metabolites and compounds of the maternal microbiota may have an impact on pregnancy outcome and infant development (Romano-Keeler and Weitkamp, 2015). The development and maturation of gut microbiota starts after birth and is converged toward an adult-like by the end of the first 3–5 years of life (Rodríguez et al., 2015; Milani et al., 2017). This dynamic process is influenced by various neonatal (mode of delivery, gestational age) and postnatal factors (type of feeding, maternal diet, environment, host genetics) (Milani et al., 2017).

During delivery and rapidly thereafter, microbiota from the mother and from the surrounding environment colonize the infant's gut. During vaginal delivery there is an extensive transmission of vaginal bacteria to infant gut,

with a predominance of *Lactobacillus* (Aagaard et al., 2012), *Prevotella* and other *Bifidobacterium* (Dominguez-Bello et al., 2010). Exposure to mother's fecal microbiota is also an important transmission route of bacteria e.g. from Enterobacteriaceae family (de Muinck in sod., 2011). The gut microbiota of infants delivered by cesarean delivery is less diverse in terms of bacteria species than the microbiota of vaginally delivered infants (Biasucci et al., 2008). During cesarean delivery, direct contact of the newborn with vaginal and fecal microbiota is absent and the first intestinal bacteria are derived from hospital environment and mother's skin. Bacterial genera underrepresented in infants born by cesarean delivery are *Staphylococcus, Corynebacterium, Propionibacterium* spp. *Escherichia, Shigella* and *Bacteroides* (Azad et al., 2013).

The age of birth gestation has also an important role in newborns' gut microbiota composition. Preterm infants show low diversity with increased colonization of potentially pathogenic bacteria from the *Enterobacteriaceae* family of the Proteobacteria phylum and reduced levels of strict anaerobes such as *Bifidobacterium*, *Bacteroides*, and *Atopobium* (Rinninella et al., 2019). Altered intestinal colonization, as well as high interindividual variability and reduced microbial diversity in preterm infants, represent a risk factor for later disease development and their outcomes.

Infant feeding methods, namely breast milk feeding and formula feeding, greatly affect the development of the gut microbiota in early life. Human milk contains proteins, fats, and carbohydrates, as well as immunoglobulins and endocannabinoids (Tanaka and Nakayama, 2017). The oligosaccharides in human milk (HMO) such as galactooligosaccharide (GOS), are one of the main components of breast milk. They are only partially digested in the small intestine and mostly reach the colon, where they are fermented, mainly by *Bifidobacterium*, to produce short-chain fatty acids (Huërou-Luron et al., 2010). Therefore, HMOs have a clear probiotic effect by selectively stimulating the development of a *Bifidobacterium*-rich microbiota.

Recent studies indicated that antibiotic exposure in early age greatly affects the development of neonatal gut microbiota. The use of antibiotics decreases the overall diversity of gut microbiota, shifts the composition toward a high abundance of *Proteobacteria* and low abundance of *Actinobacteria* populations and works selective for drug-resistant bacteria (Tanaka et al., 2009; Greenwood et al., 2014). According to some epidemiological surveys, the use of antibiotics in early life increases the risk of allergic diseases such as asthma, atopic disease, eczema, and type 1 diabetes (Langdon et al., 2016).

Impact of infant microbiota on health

A healthy host-microbiota balance guarantees optimal performance of metabolic and immune functions and prevents disease development and has recently been shown to influence the bidirectional signaling between the gut and the nervous system, termed microbiota-gut-brain axis (Cryan and Dinan, 2012).

Therefore, the development of gut microbiota in infancy is one of the crucial factors for health maintenance later in life.

Recent studies have linked gut microbiota dysbiosis with different gastrointestinal disorders like inflammatory bowel disease (IBD), ulcerative colitis, Crohn's disease and irritable bowel syndrome (IBS) (Dieterich et al., 2018), as well as with metabolic diseases like obesity, diabetes, cardiovascular diseases (Arora and Bäckhed, 2016) and cancer (Garrett, 2015). Alterations in microbiota composition are associated with the onset of autoimmune and allergic diseases including multiple sclerosis, rheumatoid arthritis, systemic lupus erythematosus, psoriasis, atopic dermatitis and food allergies (McKenzie et al., 2017; Tanaka and Nakayama, 2017). Gut microbiota dysbiosis may be involved also in the pathophysiology of different neuropsychiatric disorders, such as autism (Ghaisas et al., 2016; Hughes, Rose and Ashwood, 2018; Kim and Shin, 2018).

Probiotics as challenges for improving the gut health

Modulation of microbiota composition through the use of probiotics during the perinatal and early postnatal period as well as later in life has been proposed as a possible dietary strategy to reduce risk of disease. Probiotics are a group of living microorganisms added to food or consumed as dietary supplement for improving intestinal microbiota composition and favorably influencing health. In general, any disorder in which an aberrant microbiota or an inappropriate immune response may play a role are potential targets for probiotic intervention.

Studies have shown that administration of probiotics to pregnant women, nursing mothers, or newborns can influence the establishment and composition of infant gut microbiota, impacting early and later in life (Milani et al., 2017). Probiotic bacteria have been usually used also to treat and prevent some gastrointestinal disturbances such as IBD, IBS, or diarrhea, and new evidences support the use of probiotics in the prevention and treatment of a number of diseases including atopic diseases, immune disorders, obesity, and diabetes (Sanz, 2011; Collado, 2012).

Conclusions

Gut microbiota establishment and further microbiota shifts are very important for maintaining host health throughout life. There are different factors, including genetics, the mother's health and diet, delivery mode, breast or formula feeding and antibiotics that may influence the early development of gut microbiota. Alterations in microbial diversity and/or an aberrant microbiota composition are linked to a number of intestinal and other diseases in infants and also later in adulthood. Supplementation with probiotics has shown promising results in restoring health and preventing the disease development.

References

AAGAARD, K., MA, J., ANTONY, K.M., GANU, R., PETROSINO, J., and VERSALOVIC, J. 2014. The placenta harbors a unique microbiome. *Science Translational Medicine*, vol. 6, no. 237, pp. 237ra65.

AAGAARD, K., RIEHLE, K., MA, J., SEGATA, N., MISTRETA, T.-A., COARFA, C., RAZA, S., ROSENBAUM, S., VAN DEN VEYVER, I., MILOSAVLJEVIC, A. et al. 2012. A metagenomic approach to characterization of the vaginal microbiome signature in pregnancy. *PLOS ONE*, vol. 7, no. 6, pp. e36466.

ARORA, T. and BÄCKHEAD, F. 2016. The gut microbiota and metabolic disease: current understanding and future perspectives. *Journal of International Medicine*, vol. 280, no. 4, pp. 339-349.

ARUMUGAM, M., RAES, J., PELLETIER, E., LE PASLIER, D., YAMADA, T., MENDE, D.R., FERNANDES, G.R., TAP, J., BRULS, T., BATTO, J.M. et al. 2011. Enterotypes of the human gut microbiome. *Nature*, vol. 473, pp. 174–180.

AZAD, M.B., KONYA, T., MAUGHAM, H., GUTTMAN, D.S., FIELD, C.J., CHARI, R.S., SEARS, M.R., BECKER, A.B., SCOTT, J.A. and KORZYRSKYJ, A.L. 2013. Gut microbiota of healthy Canadian infants: profiles by mode of delivery and infant diet at 4 months. *Canadian Medical Association Journal*, vol. 185, pp. 385–394.

BIASUCCI, G., BENENATI, B., MORELLI, L., BESSI, E. and BOEHM, G.2008. Cesarean delivery may affect the early biodiversity of intestinal bacteria. *Journal of Nutrition*, vol., 138, pp. 1796S–1800S.

HUËROU-LURON, I.L., BLAT, S. and BOUDRY, G. 2010. Breast- v. formula-feeding: impacts on the digestive tract and immediate and long-term health effects. *Nutrition Research Reviews*, vol. 23, pp. 23e36.

CLEMENTE, J.C., URSELL, L.K., PARFREY, L.W. and KNIGHT, R. 2012. The impact of the gut microbiota on human health: an integrative view. Cell, vol. 148, no. 6, pp. 1258-1270.

COLLADO, M.C., BÄUERL, C. and PÈREZ-MARTİNEZ, G. 2012. Defining microbiota for developing new probiotics. *Microbial Ecology in Health and Disease,* vol. 23, pp. 18579.

CRYAN, J.F. and Dinan, T.G. 2012. Mind-altering microorganisms: the impact of the gut microbiota on brain and behaviour. *Nature Reviews Neuroscience*, vol. 13, vol. 10, pp. 701–712.

DE MUINCK, E.J., OIEN, T., STORRØ, O., JOHNSEN, R., STENSETH, N.C., RØNNINGEN, K.S. and Rudi, K. 2011. Diversity, transmission and persistence of *Escherichia coli* in a cohort of mothers and their infants. *Environmental Microbiology Reports*, vol. 3, no. 3, pp. 352–359.

DIETERICH, W., SCHINK, M. and ZOPF, Y. 2018. Microbiota in the gastrointestinal tract. *Medical Sciences* (Basel), vol. 6, no. 4, pii. E116.

DOMINGUEZ-BELLO, M.G., COSTELLO, E.K., CONTRERAS, M., MAGRIS, M., HIDALGO, G., FIERER, N. and KNIGHT, R. 2010. Delivery mode shapes the acquisition and structure of the initial microbiota across multiple body habitats in newborns. *Proceedings of the National Academy of Sciences of the United States of America*, vol. 107, pp. 11971–11975.

EGGESBO, M., BOTTEN, G., STIGUM, H., NAFSTAD, P. and MAG NUS, P. 2003. Is delivery by cesarean section a risk factor for food allergy? *Journal of Allergy and Clinical Immunology*, vol. 112, pp. 420–426.

GARRETT, W.S. 2015. Cancer and the microbiota. Science, vol. 348, no. 6230, pp. 80-86.

GHAISAS, S., MAHER, J. and KANTHASAMY, A. 2016. Gut microbiome in health and disease: Linking the microbiome-gut-brain axis and environmental factors in the pathogenesis of systemic and neurodegenerative diseases. *Pharmacology and Therapeutics,* vol. 158, pp. 52-62.

GIUDICE, L.C. 2016. Challenging dogma: the endometrium has a microbiome with functional consequences! *American Journal of Obstetrics and Gynecology*, vol. 215, pp. 682–683.

GOSABLES, M.J., LLOP, S., VALLES, Y., MOYA, A., BALLESTER, F., and FRANCINO, M.P. 2013. Meconium microbiota types dominated by lactic acid or enteric bacteria are differentially associated with maternal eczema and respiratory problems in infants. *Clinical and Experimental Allergy: Journal of the British Society for Allergy and Clinical Immunology*, vol. 43, no. 2, pp. 198–211.

GREENWOOD, C., MORROW, A.L., LAGOMARCINO, A.J., ALTAYE, M., TAFT, D.H., YU, Z., et al. 2014. Early empiric antibiotic use in preterm infants is associated with lower bacterial diversity and higher relative abundance of enterobacter. *Journal of Pediatrics*, vol. 165, pp. 23e9.

HUGHES, H.K., ROSE, D. and ASHWOOD, P. 2018. The gut microbiota and dysbiosis in autism spectrum disorders. *Current Neurology and Neuroscience Reports*, vol. 18, no. 11, pp. 81.

HUH, S.Y., RIFAS-SHIMAN, S.L., ZERA, C.A., EDWARDS, J.W.R., OKEN, E., WEISS, S.T. and GILLMAN, M.W. 2012. Delivery by caesarean section and risk of obesity in preschool age children: a prospective cohort study. *Archives of Disease in Childhood*, vol. 97, pp. 610–616.

LANGDON, A., CROOK, N. and DANTAS, G. 2016. The effects of antibiotics on the microbiome throughout development and alternative approaches for therapeutic modulation *Genome Medicine*, vol. 8, pp. 39.

KIM, Y.K. and SHIN, C. 2018. The microbiota-gut-brain axis in neuropsychiatric Disorders: pathophysiological mechanisms and Novel Treatments. *Current Neuropharmacology*, vol. 16, no. 5, pp. 559-573.

McKENZIE, C., TAN, J., MACIA, L. and MACKAY, C.R. 2017. The nutrition-gut microbiome-physiology axis and allergic diseases. *Immunological Revews*, vol. 278, pp. 277-295.

MILANI, C., DURANTI, S., BOTTACINI, F., CASEY, E., TURRONI, F., MAHONY, J., BELZER, C., DELGADO PALACIO, S., ARBOLEYA MONTES, S., MANCABELLI, L. et al. 2017. The first microbial colonizers of the human gut: composition, activities, and health implications of the infant gut microbiota. *Microbiology and molecular biology reviews*, vol. 81, no. 4, pp. e00036-17.

RELMAN, D.A. 2012. The human microbiome: ecosystem resilience and health. Nutrition Reviews, vol. 70 (Suppl 1), pp. S2–S9.

RINNINELLA, E., RAOUL, P., CINTONI, M., FRANCESCHI, F., DONATO MIGGIANO, G.A., GASBARRINI, A. and Mele, M.C. 2019. What is the healthy gut microbiota composition? A changing ecosystem across age, environment, diet, and diseases. *Microorganisms*, vol. 7, no. 1, pii: E14.

RODRIGUEZ, J.M., MURPHY, K., STANTON, C., ROSS, R.P., KOBER, O.I., JUGE, N., AVERSHINA, E., RUDI, K., NARBAD, A., JENMALM, M.C. et al. 2015. The composition of the gut microbiota throughout life, with an emphasis on early life. *Microbial Ecology in Health and Disease*, vol. 26, pp. 26050.

ROMANO-KEELER, J. and WEITKAMP, J.H. 2015. Maternal influences on fetal microbial colonization and immune development. *Pediatric Research*, vol. 77, pp. 189–195.

SANZ, Y. 2011. Gut microbiota and probiotics in maternal and infant health. *American Journal of Clinical Nutrition,* vol. 94 (6 Suppl), pp. 2000S-2005S.

SEVELSTED, A., STOKHOLM, J., BONNELYKKE, K. and BISGAARD, H. 2015. Cesarean section and chronic immune disorders. *Obstetrical and Gynecological Survey,* vol. 70, pp. 303–305.

TANAKA, S., KOBAYASHI, T., SONGJINDA, P., TATEYAMA, A., TSUBOUCHI, M., KIYOHARA, C, SHIRAKAWA, T., SONOMOTO, K. and NAKAYAMA, J. 2009. Influence of antibiotic exposure in the early postnatal period on the development of intestinal microbiota. *FEMS Immunology and Medical Microbiology*, vol. 56, pp. 80e7.

TANAKA, M. and NAKAYAMA, J. Development of the gut microbiota in infancy and its impact on health in later life. *Allergology International,* vol. 66, no. 4, pp. 515-522.

Addiction to social networks among adolescents

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Abstract

Introduction: Young people are addicted to various chemical substances, such as alcohol, tobacco, drugs, or non-chemical substances. The latter include television, internet, games of chance, sports and food. The use of the internet is an indispensable tool for school work and part of everyday life, but it also causes a retreat into an imaginary virtual world, where young people resort in order to run away from their problems.
Methods: The purpose of the research was to determine the connection between violence in childhood and addiction in adolescence, the frequency of using social networks among young people, and the impact or consequences of using social networks on family relationships and success at school. The survey was conducted among 184 students of the University of Novo Mesto Faculty of Health Sciences in March 2019.
Results: We have found that 91% of students use social networks, and 79% of them are daily users. Students believe that 18% of them consequently come into conflicts with family members. 15% of students confirm that the use of social networks reduced their effectiveness and success in school, while 23% of students find it relaxing. This alarming information shows that violence in childhood is a risk factor for addiction among adolescents.
Discussion: It is necessary to limit the use of information and communication technologies among young people and motivate them to spend more time socializing with friends in real life or in nature.
Key words: addiction, non-chemical addiction, adolescents, social network.

Introduction

Nowadays we are aware that there are many types of addictions. We can talk about food addiction, addiction to games of chance (gambling), addiction to

sexuality, sports, work (workaholics), shopping and technology addiction, including addiction to social networks. These are the forms of non-chemical addiction. Today, addiction to technology and social networks is becoming more and more common.

The internet and social networks fulfil the young person's need for friendship, even though it is conducted in different ways than traditional forms of socializing. Using online networks, such as Facebook, Twitter, Instagram, Snapchat, users can actively, or more often passively, monitor the status of their friends (Pahovič, 2017). We can talk about addiction to social networks when the internet relationships become substitutes for real relationships (Topić, 2015).

Symptoms and consequences of the internet addiction

Most often experts treat addiction to the internet as a psychophysical disorder. It is characterized by the symptoms of affective disorders and disorders of social contacts. They often associate addiction to the internet with other mental illnesses or addictions (Young, 1997). Some users have become addicted to the internet in the same manner as the ones who become addicted to drugs, alcohol, or gambling (Young, 1996). At the expense of the increased internet activities, the addict neglects at least one of the following areas (Repa, 2010), namely: educational - deterioration of grades, social - neglect of family obligations and friendly contacts, professional - abandonment of job duties and tasks, medical - back pain, strained eyes, absent-mindedness, irregular diet, disturbed sleep, excessive fatigue, and lack of hygiene.

Dangers of using social networks

In the vast majority, addiction begins in the adolescence period. During this period, adolescents are growing up and are supposed to develop their identity, establish autonomy, their attitudes towards sexual education, and decide what they will do in life. School and all its obligations take quite a lot of the adolescents' time, so they are running out of time for hobbies and other activities, and, consequently, they do not feel the pleasure of actively spending their free time and are not satisfied with themselves. Kastelic and Mikulan (2004) believe that the reason for boredom and the fact that adolescents do not value themselves is poor planning of free time, dissatisfaction with oneself, and the rapid development of adulthood, which can lead to them trying to have fun differently, more dangerously.

Methods

The purpose of the research was to determine the connection between violence in childhood and addiction in adolescence, the frequency of using social networks among students and the impact or consequences of using social networks on family relationships and success at school. The research was based on the qualitative method. For the needs of empirical part, primary and second-

ary sources were collected, analyzed and synthesized. We obtained the primary data for the analysis using the survey technique. For the theoretical part, we used professional and scientific literature, which we obtained through international databases in the field of addiction.

For the purpose of the research a closed questionnaire was prepared, based on a review of foreign and domestic literature. We used the 5-level Likert scale to determine the respondents' opinions. The first set of questions relates to demographic data, while the second part is the research part. The research was conducted among 184 full-time students of the higher education professional study program Nursing Care at the University of Novo Mesto Faculty of Health Sciences (UNM FHS) in March 2019. To collect data we used online surveys for students of UNM FHS. The survey was conducted through an online application for surveying www.1ka.si. The consent by UNM FHS was obtained. We provided anonymous and voluntary surveying. The collected data were computerized with Microsoft Office Excel; they were analyzed and the findings written in the research discussion chapter. At all stages of data collection and processing, ethical principles of research were taken into account.

Results

The research involved 184 full time UNM FHS students, 33 (18%) male students and 151 (82%) female students, mostly aged between 18 and 25 years.

34% of students talk to friends on the phone or by using the internet (through applications such as Skype, Face Time, Viber, Whatsapp) several times a day; the same percentage of students talk in such a way every day. Several times a day via instant messaging (via Windows messenger, chat via Facebook, Blackberry messenger) chat 48% of students, 31% on a daily basis, and not every day, but at least once a week 11% of students. In addition, 31% of students regularly contact their friends several times a day via other social networks, such as Facebook, My Space, Twitter, Apps (Instagram), Tumblr, games (Xbox), YouTube, 26% on a daily basis, and 16% at least once a week or not every day.

85% of students do not come into conflict with family members due to the use of the internet. 15% of students ignore their study obligations because the use of online networks takes their time, and 10% of students admit that their effectiveness or performance at school has decreased as a result of using the internet. 13% of students are being warned by their family that they spend too much time on computers. 23% think that the use of online networks relaxes them. 25% of students spend their free time on the internet or by using their mobile device. 35% of students surf the internet for no apparent reason, or while searching for concrete information they forget what they were looking for and follow something completely different. To 12% of students the use of online social networks represents the most important contact with friends. 26% of stu-

dents think that life without the internet is boring. 17% of students believe that they are addicted to using social networks, while 21% are undecided.

24 students (13%) were victims of psychological violence during childhood, 18 students (10%) were victims of physical violence, 6 students (3%) were victims of sexual violence, and 9 students (5%) were exposed to neglect in their childhood.

Discussion

We found out that 79% of students regularly speak on the phone or over the internet. 90% of students use social networks, 79% of them are day-to-day users. Rozman (2013) also notes the high percentage of the mobile phones use or the drastic increase in the use, and states that addiction to the internet or its excessive use is growing at the expense of smartphones. The EU Kids Online research, conducted among children in 25 European countries in 2010, also showed that 73% of Slovenian children use the internet every day or almost every day. The use increases with age (Livingstone et al., 2011). Further findings of our research show that to 12% of students the use of online social networks represents the most important contact with their friends and Repa (2010) states that the internet is an ideal environment for a person who has difficulties in making contacts, is less confident, and has self-image problems. The way of life and lifestyle have changed in the present day, therefore the use of the internet is in many cases urgent today. For this reason, people are not even thinking about the effects and consequences. Rozman (2013) further confirms that the essential characteristic of all social networks is to establish and maintain connections. This can also be good, as we can find friends and acquaintances, who we have long lost contact with. Ule (2008) considers that adolescents spend a lot of time establishing and maintaining friendships and invest a large part of their energy and social life into it.

Students believe that 15% of them consequently come into conflict with family members. 15% of students acknowledge that they neglect their study obligations, as confirmed by Goldberg's research (1996, and Repa, 2010) that young people spend more and more time on the internet to experience satisfaction; they are increasingly criticized for abandoning social contacts, job, school and family obligations, and they use the internet for a longer period of time than they intended. The latter was also confirmed by our research - 13% of students are being warned by their family members that they spend too much time behind a computer. Consequently, for 10% of students their effectiveness or success in school has dropped, while 23% of students state that social networking relaxes them.

An alarming piece of information shows that violence in childhood is a risk factor in addiction among adolescents, as our research found a greater incidence of different forms of addiction among adolescents, especially girls who were exposed to violence. Kašnik Janet et al. (2009) state that risk factors are

those characteristics or threats that are present in the individual and increase the likelihood that this individual will develop a disorder more often than others. Although Rozman (2013) claims that half of the occurrence of addiction can be attributed to heredity or genetic factors, Topić (2015) and Rozman (1999) state that the development of addiction can also be influenced by the primary family environment, including the traumatic experience that has been proven by our research; furthermore, social environment and the repetition of behavioural patterns also influence the development of addiction. Thus, we can say that in the youth period family, society, school and other institutions have a major influence on the development of addiction.

Conclusion

It is necessary to limit the use of information and communication technologies among young people and motivate them to spend more time socializing with friends in real life or in nature. A huge mistake made by young parents is that they often wobble up their children using smartphones and tablets. Another major issue is that children see a negative example of using the internet in their parents. Therefore, let us try to use social networks only for practical purposes, when needed, and avoid using them as a way of spending our free time.

References

GOLDBERG, I. 1996. Has your Computer use become out of control? In: REPE, J. 2008. *Zasvojenost z internetom:* diploma thesis [online] Ljubljana: Univerza v Ljubljani, Fakulteta za družbene vede, pp. 18. [viewed 3 June 2019]. Available from: http://www.uml.edu/student-services/counseling/internet/

KASTELIC, A. and MIKULAN, M. 2004. Mladostnik in droge: *priročnik za starše in učitelje*. Ljubljana: Prohealth.

KAŠNIK JANET, M., JANET, E., SENICA, M., KALIŠNIK ŠAVLI, M., PRAPER, P., GORIUP, J., RONCELLI VAUPOT, S., GRAHOVAC, T. and POGOREVC, N., 2009. Da sije sonce: didaktične igre za razvoj otrokovih kompetenc na področju preprečevanja zasvojenosti. Ljubljana: Zavod RS za šolstvo.

LIVINGSTONE, S., HADDON, L., GORZIG, A. and ÓLAFSSON, K., 2011. Risks and safety on the internet: the perspective of European children: full findings and policy implications from the EU Kids Online survey of 9-16 year olds and their parents in 25 countries. The London School of Economics and Political Science. [viewed 3 June 2019] Available from: http://eprints.lse.ac.uk/33731/1/Risks%20and%20safety%20on%20the%20internet(lsero).pdf

PAHOVIČ, L., 2017. Odlogiraj se. Vrste spletnih zasvojenosti. [viewed 8 June 2019]. Available from: https://www.delo.si/znanje/potrosnik/odlogiraj-se-vrste-spletnih-zasvojenosti.html

REPA, J., 2010. Zasvojenost z internetom. Ljubljana: Salve.

ROZMAN, S., 1999. Peklenska gugalnica. Ljubljana: Vale-Novak.

ROZMAN, S., 2013. Umirjenost: kako prepoznati zasvojenost, jo razumeti in poiskati pot iz nje. Ljubljana: Modrijan.

YOUNG S., K., 1996. Internet addiction: The emergence of a new clinical disoreder. CyberPsychology and Behavior, vol. 1, no. 3, pp. 237-244. Paper presented at the 104th annual meeting of the American Psychological Association, Toronto, Canada.

YOUNG S., K., 1997. What Makes the Internet Addictive: Potential Explanations for Pathological Internet Use. Paper presented at the 105th annual conference of the American Psychological Association, Chicago. [viewed 3 June 2019]. Available from: http://www.netaddiction.com/articles/habitforming.htm

TOPIĆ, P., 2015. Zasvojenost s seksualnostjo v digitalni dobi. Maribor: Založba Pivec.

ULE, M., 2008. Za vedno mladi? Socialna psihologija odraščanja. Ljubljana: Fakulteta za družbene vede.

The use of probiotics in the preschool period

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Abstract

Introduction: Gut microbiota is a complex community of microorganisms that inhabit the host's intestine and are in a commensal partnership with it. In the first months of life the gut microbiota composition is influenced by many factors, such as mode of delivery, method of infant feeding, age and maternal health status, length of hospitalization and antibiotic use in the mother or child. The balance of the gut microbiota composition, which can be regulated by the consumption of probiotics, has a significant impact on the health of the individual.
Methods: The aim was to research the frequency of probiotics use in the preschool period. The results were obtained with an anonymous questionnaire filled by parents of children aged up to 6 years. The questions were related to knowledge of probiotics and their effects on health and the frequency and quantity of consumption. *Results:* A total of 102 parents participated in the survey. In 86.3% probiotics are included in child's diet of which 36.7% through foods, 28.4% through a combination of foods and supplements and 12.8% through supplements. Main source of probiotics in child's diet is cheese (81.4%) and plain yoghurt (79.4%), consumed 1 to 2 times a week. The most common amount of cheese is 20 g (46.1%) and 2 dl (43.1%) of yogurt. *Discussion and conclusion:* The probiotics are consumed through foods or supplements already in the preschool period. Moreover, the favourable impact on children health has also been reported.
Keywords: probiotics, gut microbiota, probiotics in the preschool period

Introduction

The human gastrointestinal (GI) tract is colonised by a complex population of microorganisms, which play an important role in health and disease of the host. Main beneficial outcomes of so-called gut microbiota are the result of im-

mune and metabolic homeostasis and protection against pathogens (Thursby and Juge, 2017). The first contact of gut newborn with microbiota occurs already during pregnancy and is shaped mostly during first years of life (Nuriel-Ohayon et al., 2016).

Although the composition of gut microbiota is very dynamic during the first year of life, the microbial diversity is low. Approximately at the end of the first year of life, the microbial population stabilizes and reaches a more complex structure and becomes more similar to the adult microbiota by the age of 3 years (Marques et al., 2010; Mueller et al., 2015). Some authors state that the child's microbiota still differs in composition and diversity from the adult microbiota by the age of 5 years (Bertelsen et al., 2016).

The development and composition of gut microbiota is influenced by many factors including the mode of delivery (caesarean section or vaginal delivery), feeding (breastfeeding or milk formula), mother's health condition, the use of medications especially antibiotics and environment (Binns and Lee, 2010; Marques et al., 2010). Factors such as caesarean section, feeding with milk formulations, premature birth and the use of antibiotics are considered to have an unbeneficial effect on the composition of the gut microbiota (Bertelsen et al., 2016).

Unsuccessful microbial establishment during early life can lead to health problems and diseases later in life (Hashemi et al., 2016). Altered composis tion of gut microbiota or dysbiosis refers to imbalance between beneficial and harmful bacteria (Butel, 2014; Mizock, 2015). Changes in the microbiota are asi sociated with the development of many pathological conditions, such as infantile colic, inflammatory bowel syndrome, necrotizing enterocolitis, asthma, atopic diseases, celiac disease, diabetes, mood disorders and autism spectrum disorders (Baldassarre et al., 2018). The state of dysbiosis can significantly afs fect also the immune system development and can lead to autoimmune diseases (Vangay et al., 2015). There is a two-way communication path between gut along with residence microbiota and central nervous system that is now recognised to modulate the intestinal homeostasis and can affect also the well-being and cognitive abilities of the host (Carabotti et al., 2015). The gut microbii ota can be altered by a number of health conditions, such as immune system and gut–brain axis disorders or the digestive tract and allergic diseases. Gut microbiota plays also an important role in the initiation and progression of infectious diseases (Harris et al., 2017). Microbiota could directly prevent the invasion of pathogenic microorganism through so called colonization resistance process that includes competition for adhesion sites and nutrients, antimicrobial products and indirectly by immune response stimulation (Kosiewicz et al., 2011; Louis et al., 2014; Hashemi et al., 2016). Because of its role in human health, there is an increased interest in gut microbiota modulation by the use of probiotics (Azad et al, 2018). The term that stands for live microorganism which when administered in adequate amounts confer a health benefit on the host (FAO/WHO, 2002).

Methods

A questionnaire based study was conducted to obtain the information about the use of probiotics in the preschool period. The parents of children aged up to 6 years were invited to participate. The first part of the questionnaire referred to the demographic information of parents and their knowledge and experience with the consumption of probiotics. Second part referred to the demob graphic information of children and the use and experience of the using probiotics consumption for their children.

The information about the source, frequency and quantity of consumed probiotic foods or supplements was investigated. We were also interested in the motive and result of probiotic consumption. Each parent provided information for one child. The questionnaire was available on the website www.1ka.si.

Results

The questionnaire was completed by 102 parents, 96 % of women and 4 % of men. Age of parents ranged from 22 years to 47 years. All participants have already heard about the term probiotics and only in 4 % the purpose of use was unknown. Parents most often, learned about probiotics from books or magazines (18.4 %) or online (18 %). Their consumption of probiotic was most often encouraged through an online source (21.6 %).

Each parent provided information about one of their children. 102 children participated in the study, 57 % of girls and 43 % of boys. The age of children ranged from 2 months to 5 years. 88.2 % of the parents agreed with the statement, that probiotic consumption is healthy for their child. And also 86.3% of parents claim to include probiotics in their child's diet. The most common source of probiotics is exclusively probiotic foods (36.7 %), followed by a combination of probiotic foods and supplements (28.4 %) and exclusively through food supplements (12.8 %). There were 4.9 % of children, who didn't consume any probiotics, either through food or supplements, until the age of 15 months.

That consumption of probiotics during pregnancy was stated in 11.8 % cases. The children first experience of probiotic consumption was in most cases associated with antibiotic treatment (25.5 %), followed by the introduction of probiotics through milk formulation and breastfeeding (20.6 %) and the introduction to of solid foods (24.5 %). The first administration of probiotics to the newborn were the first indigestion problems in 4.9 % cases, in 1.9%, for allergies treatment or the treatment of infantile colic in 1%.

The main sources of probiotics in child's diet are cheese (81.4 %), plain yogurt (79.4 %), pickles (60.8 %) and fruit yogurt (57.8 %). Most commonly consumed amount of cheese and pickles is 20 g (46.1 % and 30.4 %) and 200 ml of plain and fruit yogurt (43.1 % and 36.3 %). Individual probiotic foods are most commonly consumed 1 to 2 times a week. When we combine the frequency of consumption, children consume probiotic foods on average 1.7 times a day. Table 1 and 2 shows the use of probiotic foods in the child's diet in the last month.

When we include all probiotic foods, the daily average intake is 141.7 ml/day of liquid probiotic and 18.4 g/day of solid probiotic foods.

Table 1: Use of liquid probiotic foods in the last month (four weeks)

	Plain yogurt	*Fruit yogurt*	*Plain kefir*	*Fruit kefir*	*Plain buttermilk*	*Fruit buttermilk*	*Acidophilus milk*	*Whey*
Consumed probiotics (%)	79.4	57.8	31.4	10.8	12.8	7.8	22.5	11.7
Consumed probiotics (ml/month)	1692.1	1134.3	374.5	95.1	203.9	42.2	302.9	121.6

Table 2: Use of solid probiotic foods in the last month (four weeks)

	Sauerkraut	*Sour turnip*	*Pickles*	*Cheese*
Consumed probiotics (%)	44.1	22.6	60.8	81.4
Consumed probiotics (g/month)	105.1	29.6	95.8	284.3

Parents are most likely to add probiotics in a child's diet for to the following health problems: diarrhea (44.1 %), antibiotic treatment (42.1 %), constipation (35.4 %), maintaining gut health (32.3 %), general well-being, (6 %), food allergies (8.8 %), skin allergies (6.9 %), mood disorders (3.9 %) and digestive tract diseases (5.9 %).

The most commonly observed changes after probiotics consumption in children are stool texture (23.3 %), constipation relief (16.3 %), decreased bloating (13.9 %), decreased gas (10.2 %), faster common cold overcome (8.2 %), reduced frequency of diarrhea (6.9 %), mood improvements (6.5 %), improvement in allergic rash (2.9 %), faster allergy overcome (0.8 %) and improvement of neurological problems (0.4 %). There were 5.7 % of parents that didn't notice any changes after the probiotic use and 4.9 % of parents reported that their children don't consume probiotics.

Discussion

Due to increasing consumer awareness about the health benefit the interest in probiotic foods is rapidly growing (Tripathi and Giri, 2014; Panghal at el., 2018). The availability of probiotic products for infants and young children is also increasing (Bridgman at el., 2014). Our results show that parents are well aware of the concept and the use of probiotics, since only 4 % of parents are not familiar with the purpose probiotic use. The most common source of information about the use and benefits of probiotic among parents was acquired online. From the results we see that the consumption of probiotics is familiar already during pregnancy (11.8 %).

The first years of the life are the most important for the development of the gut microbiota, and this is one of the reasons to devote enough attention to this period. Gut microbiota can be strengthened by the daily intake of probiotics that have a beneficial effect on the host's health when consumed in sufficient concentrations (Hashemi et al., 2016). Most children attend kindergarten or other forms of child care where they are often exposed to the daily risk of contagious infectious diseases. Probiotics can offer a number of potential health benefits primarily by maintaining the balance and composition of the gut microbiota. Therefore, probiotics are often used therapeutically, in cases such as, relieving constipation, preventing and treating childhood diarrhea, upper respiratory infections, irritable bowel syndrome, and preventing food allergies and atopic diseases (Ranadheera et al., 2010; Tripathi and Giri, 2014). Antibiotics are the most common drugs prescribed to children (Vangay et al., 2015) resulting in diarrhea as a most common side effect of antibiotic treatment (Mizock, 2015). Our results show that parents often administrated the probiotics for the first time with the aim to maintain or improve the health condition of their children, as in the case of antibiotic treatment, digestive problems, allergies and infantile colic. The results also show that probiotics are frequently added during health conditions such as diarrhea (44.1 %), antibiotic treatment (42.1 %) and constipation (35.4 %). Parents also report the changes they observed after the use of probiotics, such as changed stool texture (23.3 %), constipation relief (16.3 %), reduced bloating (13.9 %), reduced gas (10.2 %), and reduced frequency of diarrhea (6.9 %).

Initially, the probiotics are often administrated to child with dairy products that are considered as ideal vector of probiotic delivery into the digestive tract (Ranadheera et al., 2010). However, not only dairy products contain probiotics, we can find probiotics in fermented foods such as pickles, sauerkraut and sour turnip (Beganović at el., 2014). Our results show that the most common source of probiotics in children is through probiotic foods (36.7 %). Nevertheless, there is a growing trend in the use of probiotic supplements, such as powders and capsules (Ranadheera et al., 2010).

In order for probiotics to be effective, they must be consumed at least daily, to have the ability to colonize the gut and have a benefit for the host (Binns and Lee, 2010). Our results show that children consume daily on average 141.7 ml/day of liquid probiotic and 18.4 g/day of solid probiotic foods. This is achieved by combining various probiotic foods.

Conclusions

The results of our study showed that parents are very familiar with the concept and the use of probiotics. This is evident through children's daily probiotic consumption in the preschool period through probiotic foods or supplements. Some parents begin with the use of probiotics even before a preschool period, during pregnancy and shortly after birth of a child. Consumption of probiotics is often associated with different health conditions, and our results show

that parents add probiotics to their children along with certain health conditions, that is also the most common reason for the first probiotic consumption. Parents also notice an improvement of children wellbeing after the probiotic use. The obtained information can serve as the basis for future planning of nutrition in preschool period. Kindergarten represents an ideal opportunity for more frequent and diverse inclusion of probiotic foods for beneficial effect on health and children can also learn about foods with different flavours and textures.

References

AZAD, A.K., SARKER, M., LI, T. and YIN, J., 2018. Probiotic Species in the Modulation of Gut Microbiota: An Overview [online]. *BioMed Research International*, vol. 2018. [viewed 25 June 2019]. Available from: https://doi.org/10.1155/2018/9478630

BINNS, C. and LEE, M.K., 2010. The use of Probiotics to Prevent Diarrhea in Young Children Attending Child Care Centers: A Review [online]. *Journal of Experimental & Clinical Medicine*, vol. 2, no. 6, pp. 269–273. [viewed 31 May 2019]. Available from: https://doi.org/10.1016/j.jecm.2010.08.001

BEGANOVIĆ, J., KOS, B., LEBOŠ PAVUNC, A., UROIĆ, K., JOKIĆ, M. and ŠUŠKOVIĆ, J. 2014. Traditionally produced sauerkraut as source of autochthonous functional starter cultures [online]. *Microbiological Research*, vol. 169, no. 7-8, pp. 623–632. [viewed 10 June 2019]. Available from: https://doi.org/10.1016/j.micres.2013.09.015

BERTELSEN, R.J., JENSEN, E.T. and RINGEL-KULKA, T., 2016. Use of probiotics and prebiotics in infant feeding [online]. *Best Practice & Research Clinical Gastroenterology*, vol. 30, no. 1, pp. 39–48. [viewed 31 May 2019]. Available from: https://doi.org/10.1016/j.bpg.2016.01.001

BRIDGMAN, S.L., AZAD, M.B., FIELD, C.J., LETOURNEAU, N., JOHNSTON, D.W., KAPLAN, B.J. and KOZYRSKYJ, A.L., 2014. Maternal perspectives on the use of probiotics in infants: a cross-sectional survey [online]. *BMC Complementary and Alternative Medicine*, vol. 14, no. 366, pp. 1–9. [viewed 2 June 2019]. Available from: https://doi.org/10.1186/1472-6882-14-366

BUTEL, M.J., 2014. Probiotics, gut microbiota and health [online]. *Médecine et Maladies Infectieuses*, vol. 44, no. 1, pp. 1–8. [viewed 1 June 2019]. Available from: https://doi.org/10.1016/j.medmal.2013.10.002

CARABOTTI, M., SCIROCCO, A., MASELLI, M.A. and SEVERI, C., 2015. The gut-brain axis: interactions between enteric microbiota, central and enteric nervous systems. *Annals of Gastroenterology : Quarterly Publication of the Hellenic Society of Gastroenterology*, vol, 28, no. 2, pp. 203–209.

FAO/WHO., 2002. Guidelines for the Evaluation of Probiotics in Food [online]. [viewed 30 May 2019]. Available from: http://www.who.int/foodsafety/fs_management/en/probiotic_guidelines.pdf

HARRIS, V.C., HAAK, B.W., BOELE VAN HENSBROEK, M. and WIERSINGA, W.J., 2017. The Intestinal Microbiome in Infectious Diseases: The Clinical Relevance of a Rapidly Emerging Field [online]. *Open Forum Infectious Diseases*, vol. 4, no. 3. [viewed 25 June 2019]. Available from: https://doi.org/10.1093/ofid/ofx144

HASHEMI, A., VILLA, C.R. and COMELLI, E.M., 2016. Probiotics in early life: a preventative and treatment approach [online]. *Food & Function*, vol. 7, no. 4, pp. 1752–1768. [viewed 2 June 2019]. Available from: https://doi.org/10.1039/c5fo01148e

KOSIEWICZ, M.M., ZIRNHELD, A. and ALARD, P., 2011. Gut microbiota, immunity, and disease: a complex relationship [online]. *Frontiers in Microbiology*, vol. 2, pp. 37–47. [viewed 25 June 2019]. Available from: https://doi.org/10.3389/fmicb.2011.00180

LOUIS, P., HOLD, G.L. and FLINT, H.J., 2014. The gut microbiota, bacterial metabolites and colorectal cancer [online]. *Nature Reviews Microbiology*, vol. 12, no. 10, pp. 661–672. [viewed 25 June 2019]. Available from: https://doi.org/10.1038/nrmicro3344

MARQUES, T.M., WALL, R., ROSS, R.P., FITZGERALD, G.F., RYAN, C.A. and STANTON, C., 2010. Programming infant gut microbiota: influence of dietary and environmental factors [online]. *Current Opinion in Biotechnology*, vol. 21, no. 2, pp. 149–156. [viewed 2 June 2019]. Available from: https://doi.org/10.1016/j.copbio.2010.03.020

MIZOCK, B.A., 2015. Probiotics [online]. *Disease-a-Month*, vol. 61, no. 7, pp. 259–290. [viewed 31 May 2019]. Available from: https://doi.org/10.1016/j.disamonth.2015.03.011

MUELLER, N., BAKACS, E., COMBELLICK, J., GRIGORYAN, Z. and DOMINGUEZ-BELLO, M.G., 2015. The infant microbiome development: mom matters [online]. *Trends in Molecular Medicine*, vol. 21, no. 2, pp. 109–117. [viewed 1 June 2019]. Available from: https://doi.org/10.1016/j.molmed.2014.12.002

NURIEL-OHAYON, M., NEUMAN, H. and KOREN, O. 2016. Microbial Changes during Pregnancy, Birth, and Infancy [online]. *Frontiers in Microbiology*, vol. 7. [viewed 16 June 2019]. Available from: https://doi.org/10.3389/fmicb.2016.01031

PANGHAL, A., JANGHU, S., VIRKAR, K., GAT, Y., KUMAR, V. and CHHIKARA, N., 2018. Potential non-dairy probiotic products – A healthy approach [online]. *Food Bioscience*, vol. 21, pp. 80–89. [viewed 2 June 2019]. Available from: https://doi.org/10.1016/j.fbio.2017.12.003

RANADHEERA R.D.C.S., BAINES, S. K. IN ADAMS, M. C., 2010. Importance of food in probiotic efficacy [online]. *Food Research International*, vol. 43, no. 1, pp. 1–7. [viewed 2 June 2019]. Available from: https://doi.org/10.1016/j.foodres.2009.09.009

THURSBY, E. and JUGE, N., 2017. Introduction to the human gut microbiota [online]. *Biochemical Journal*, vol. 474, no. 11, pp. 1823–1836. [viewed 2 June 2019]. Available from: https://doi.org/10.1042/BCJ20160510

TRIPATHI, M.K. and GIRI, S.K., 2014. Probiotic functional foods: Survival of probiotics during processing and storage [online]. *Journal of Functional Foods*, vol. 9, pp. 225–241. [viewed 1 June 2019]. Available from: https://doi.org/10.1016/j.jff.2014.04.030

VANGAY, P., WARD, T., GERBER, J. and KNIGHTS, D., 2015. Antibiotics, Pediatric Dysbiosis, and Disease [online]. *Cell Host & Microbe*, vol. 17, no. 5, pp. 553–564. [viewed 2 June 2019]. Available from: https://doi.org/10.1016/j.chom.2015.04.006

The effect of parental divorce on the psychosocial health of children

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Abstract

Problem presentation: Divorce is a life-changing event for a family and its members. Already adults have problems coping with it, let alone kids. Emotions of the adults often overshadow the needs of the children and their needs remain overlooked. That is why it is important to speak up about kids who have experienced divorce of their parents. *Purpose*: At work, we often see that divorce and its consequences affect a child's psychosocial and physical health. The most obvious change after divorce is moving. The financial situation also changes, as does the children's life style. Often hidden, but important, is the change in children's emotions and emotional behaviour. Divorce can have a negative effect on their sense of (emotional) safety; they start living in 'two-homes' and their parents often cannot communicate any more. The children have to cope with different intense emotions – shame, anger, guilt, mistrust, separation… In such situations, the children need parents who know how to create an environment that allows the children to express their feelings and know how to accept them. For this to happen, the parents need to be sensible and responsive to their children's emotions and needs. The contribution presents ways of relief for children during the process of divorce. *Findings*: Despite divorce, both parents still have their parenting rights and they are still both parents. They are divorcing each other as partners, but not as parents. It is up to them how they will organize new family life for their children.

Key words: divorce, children, children`s needs, psychosocial health, relief for children

Introduction

Divorce is not a single event but a multi-phased process, which radically changes family relationships. It is often an indicator of other problems in these fam-

ilies and their pre-divorce experiences, the effects of which may be even more important for children's welfare than the separation as such (Aro, 1988; Huure et. al., 2006). Divorce rates are increasing, as is the number of children who have experienced divorce of their parents. Today, high-conflict divorce is a common phenomenon where the parents cannot cooperate, which affects the children even more.

Effects of divorce on kids

Various studies revealed that parental divorce is an indicator of such stress in childhood that its influences persist well into adulthood (Huure et. al., 2006). Despite differences in research findings about the effects of divorce on children, a common agreement exists that divorce has a negative effect on children and raises the risk of development of adaptation problems (Amato 2001; Kelly & Emery 2003; Portnoy, 2008; Kushner, 2009; Lansford, 2009; Coleman & Glenn, 2010 and Andrejč, 2014). Important protective factors for children are quality parenting and supportive relationship from their parents (Andrejč, 2014).

Change of family life

Already during the partnership, relationship comes to the point where partners are not showing love anymore. However, when partners decide to divorce, the loss of love becomes a fact. Parents are not partners any more, but only parents. With that, the kids' ideal image of the family and sense of security are lost. Primary family form is changed, because the children are now moving from one parent to another. Because of that, it is important for parents to understand that they are still parents, even though they ended their partnership. Parents have to '…cope with the painful loss, because they are ending the relationship which was important for them for one part of their life and they gave their life energy for it (Ganc, 2015, p. 46)'.

For children, it is burdensome feeling that they are responsible for their parents' divorce. That is why it is suggested that both parents explain the children what changes will come with the divorce for their family, and that it is not the children's fault that parents got divorced. Parents have to talk honestly in the way that children can understand. They have to tell their children that they still love them, that both of them are still the parents and that both will take care of the child together. It is important to tell the children where they will live, how they will interact with the parents, how they will stay in touch, how they will celebrate special holidays (birthdays, Christmas, etc.) and other important things for their family, for example where their family dog will live. That is how parents will relieve the children's feelings of guilt and provide them with safety and predictability.

For some children, the divorce is a first big loss it their life, where they are experiencing the mourning process for the first time. Because of that, they

need a lot of support and understanding, while the mourning process and adaptation process last longer (Ganc, 2015). It is important that parents are able to encourage regular and quality personal contacts between the child and the other parent, despite their feelings for (ex partner and) other parent. The child needs a safe environment to express feelings and a place where the feelings are accepted. This means that the children can tell the parent that they miss the other parent and that they loves both of them. This is important because the children often experience an emotional confusion about what they can tell their parents. The most common feeling after divorce that they see between the parents is anger.

Residential change

The most obvious change after divorce is relocation of the family. One parent moves or parent with the child moves. The absence of one parent is the first change that the child notices and all children, regardless of age or understanding, feel it. Even a new-born baby senses changes the environment and notices the smell of important persons or their absence. By moving, the primary social environment of the child is changed. With the divorce, the child gets "two homes". It is important for the children that they are accepted with all intense emotions and love toward both parents in both homes.

'It would appear that residential change by itself does not contribute to divorce associated stress. It is when the divorce is accompanied by a perceived decline in the quality of housing that residential change contributes to divorce associated stress (Booth, 1993, p. 212)'. Having a place of their own in both homes if of great importance for the children's wellbeing. This does not necessarily mean an own room, but some private place where the children can keep their things. The feeling of homeliness can be created with transporting special things; however, this notion has to be supported by both parents. It is also very important for parents to keep the parental unity in both homes.

Change of socioeconomic status

'General findings show that lower income in the family household after divorce reduces the well-being of kids.' (Amato, 2010 and Andrejč, 2014, p. 32). The parent that has custody of the child gets alimony from the non-residential parent. The height of alimony depends on the child's need and parents' income. With the change of family economic status, children often change or stop their after school activities. This partly due to the organization of family life and activities, while one parent is responsible for all the things. This could be different, if non-custodial parent wants and is able to stay involved. In reality, they are often not able to do that, changing the children's free time. Active parents are often replaced by significant others, such as grandparents or other relatives. In spite of this, it would be important for non-residential parent to do their tasks.

It is important for children to keep their everyday routine and social network. This should be guided by parents. By doing so, they will easily keep the feeling of security. For child's benefit, both parents should stay active in their parental role and children's life. That means they should still share responsibility for the child's life. However, for that to happen, good communication and cooperation is necessary. Experts say, that for children's development '… more important are relationships in the family, than the type of family' (Andrejč, 2014, p. 33).

Change in parent – child relationship

If parents cannot communicate and cooperate because of their emotional stress, it can cause an emotional distance between the child and the parent. 'The most difficult for the child in the process of divorce, are intense and highly conflicted relationships between the most affectionate people. Research shows that conflict is a higher risk factor. The single biggest predictor of poor outcome for children is continuing conflict between the parents' (Portnoy, 2008 and Andrejč, 2014, p. 33). Despite their intense emotions, parents need to recognize and satisfy children's needs, observe their emotions and pay attention to them. 'The quality of the parents' relationship is the most important aspect of the child's development…' (Andrejč, 2018, p. 83). In the process of divorce, the children are confused, separated, and, in search for identification, they lose security and they are really vulnerable. In such situations, the children need parents they can rely on and connect with. 'Parent – child relationship is the basis of the individual's personality development, adaptation and performance' (Andrejč, 2014, p. 36).

Children are often a reflection of the parental relationship and they express their distress individually. The institutions start working with the family because of problematic children, which I believe to be incorrect. A child's behaviour is a response to the family dynamic, which the parents are responsible for. Parents should find help (together or individual) for competent parenting, where they would work on their parental role. Only with that will they be able to give their children a safe space, where they can express their feelings.

Benefit of the child

All the institutions involved in the process of divorce must take care of children's benefit and well-being. The benefit of the child should be a priority also for the parents. This should motivate them for good communication and cooperation. The child, whose parents have divorced as partners, needs parents who will be more sensible and responsive to their children's emotions and needs. The needs of the child are changed after divorce, because they need more answers and confirmation – for example do they still love me, can I love both of them, how will it be in the future. Children need the confirmation of parental love and a feeling of security more often.

Conclusions

'The biggest risk factor and predictor of poor outcome for children is continuing conflict between the parents, weak adaptation of parents to divorce, incompetent parenting and insufficient contact between kid and one or both parents' (Andrejč 2014, p. 38). Children need a clear message from the parents – *we love you, we are both your parents and we will do anything for you. Even though we are not living together anymore, we will cooperate and take care of you together.* Despite divorce, both parents keep their roles as parents. They still have their duties and rights. However, it is up to parents if they will be meaningfully involved in their children's life. Studies show, that parents' response to divorce affects the child's experience of divorce and the outcome.

References

AMATO, P. R., 2001. Children of divorce in the 1990s: an update of the Amato and Keith (1991) meta-analysis. *Journal of Family Psychology*, vol. 15, no. 3, pp. 355 –370.

AMATO, P. R., 2010. Research on divorce: continuing trends and new developments. *Journal of Marriage and Family*, vol. 72, no. 3, pp. 650 – 666.

ANDREJČ, A., 2014. Negativni učinki razvze staršev na otroke in mladostnike. *Socialno delo*, vol. 53, no. 1, pp. 25 – 42.

ANDREJČ, A., 2018. *Razveza staršev in otroci*. Maribor: Kulturni center.

ARO, H., 1988. Parental discord, divorce and adolescent development. *European Archives of Psychiatry and Neurological Sciences*, vol. 237, no. 2, pp. 106 – 111.

BOOTH, A., & AMATO, P., 1993. Divorce, Residential Change, and Stress. *Journal of Divorce & Remarriage*, vol. 18, no 1-2, pp. 205 – 214.

COLEMAN, L., GLENN, F., 2010. The varied impact of couple relationship breakdown on children: implications for practice and policy. *Children & Society*, vol. 24, no. 3, pp. 238 – 249.

GANC, D., 2015. *Izzivi očetovstva po ločitvi*. Sevnica: Družinski inštitut Zaupanje.

HUURRE, T., JUNKKARI, H., & ARO, H., 2006. Long – term psychosocial effects of parental divorce. *European Archives of Psychiatry and Clinical Neuroscience*, vol. 256, no. 4, pp. 256 – 263.

KELLY, J. B., EMERY, R. E., 2003. Children's adjustment following divorce: risk and resilience perspectives. *Family Relations*, vol. 52, no. 4, pp. 352 – 362.

KUSHNER, M. A., 2009. A review of the empirical literature about child development and adjustment postseparation. *Journal of Divorce & Remarriage*, vol. 50, no. 7, pp. 496 – 516.

LANSFORD, J. E., 2009. Parental divorce and children's adjustment. *Perspectives on Psychological Science*, vol., 4, no. 2, pp. 140 – 152.

PORTNOY, S. M., 2008. Psychology of divorce: a lawyer's primer. Part 2: the effects of divorce on children. American Journal of Family Law, vol. 21, no. 4, pp. 126 – 134. [viewed 10 June 2019]. Available from: http://www.port4noyassociates.com/resources/articles/psychology2.html

The frequency and duration of organized outdoor activities

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Abstract

Introduction: The purpose of this research is to determine to what extent the differences in the frequency and duration of organized outdoor exercise activities (OGDP) are influenced by the selected indicators of the environment, the support of the kindergarten, and the knowledge and opinion of educators. *Methods*: We included 128 educators from different parts of Slovenia, divided them into two groups, depending on the conditions for the performance of OGDP. The variables sample was a deliberately prepared questionnaire, which contain 4 theoretically equivalent independent variables: environment, leadership support, knowledge and the opinion of the educator and two dependent variables: the duration and frequency of the performance of OGDP. To measure the influence of independent variables, we used multiplicative regression analysis on a dependent basis. *Results:* Knowledge and support of management significantly impact on the duration of OGDP, while the knowledge and environment of the kindergarten influence the frequency. With all the selected independent variables we explained 37.8% of the variance, or rather 35.8% of its revised value. *Discussion and conclusions:* Based on the findings, we suggest that the management of the kindergartens will consider the possibility of greater support to educators in the performance of OGDP and provide them with additional training on the basis of which we assume that educators will increase the frequency and duration of OGDP.
Keywords: environment, preschool child, movement, health

Introduction

A brief synopsis of relevant literature in the field of the influence of movement in nature shows that the frequency and duration of OGDP are inter alia influenced by the environment in which the kindergarten is located, the knowledge

of educators on the ways of developing outdoor competences, the opinion of educators about the importance of movement in nature and the support of leadership in financial, organizational, personnel and material aspects. According to many authors, the frequency, duration and intensity of children's movement outdoors are linked to a healthy childhood in general (Thompson Coon et al., 2011), psychological health (Knight et al., 2010), stress therapy (Györek et al., 2014)), the development of motor abilities (Pišot et al., 2010) and, last but not least as an investment for healthy aging (Retar et al., 2012; Voljč, 2015).

The time that children should actively spend is increased through longer research periods. In addition, its intensity, frequency and duration, which is enabled by modern technology are defined with more precision (Krivokapi et al., 2014; Kolle et al., 2009; Volmut, 2016). An analysis of various scientific articles has shown that most authors suggest at least 30 minutes to one hour of daily movement activity, which can be defined as moderately or moderately intense (Pišot and Završnik, 2005; Škof, 2007; Kupec, 2016).

Various questionnaires for measuring the daily activity of children are still widely used in the research area, which are, however, less precise than more objective modern devices (e.g. accelerometers, etc.) (Volmut et al., 2013). Volmut (2016) notes that only between 21 and 67% of Slovenian children between the ages of 5 and 8 reach the minimum daily recommendations for medium and high intensity.

The autonomy of educators in kindergartens to select and adapt the pathways for the realization of process and development goals can be observed through subjective theories (Gregorc et al., 2012) or we measure the impact of several more objective indicators (the impact of a stimulating environment, material conditions, etc.).

In this article, we want to determine whether individual indicators (the environment of the kindergarten, the opinion of the educator, the knowledge of the educator, the support of management) have the same effect on the frequency and duration of the OGDP.

Methods

A sample of respondents

The 128 educators from 24 kindergartens, selected in different regions of Slovenia, were chosen for the selected sample. We selected 59 educators from environments that have better conditions for performing physical activities in nature (less than 500 m to a suitable meadow, forest, etc., where organized activities of movement could be carried out).

A sample of variables

The sample of variables is a content-reconstructed and supplemented questionnaire (Zajec, Videmšek, Štihec, Pišot, Šimunič, 2010), which consists of three

sets. The first set represents the basic demographic variables (age and working age of the educator, the group in which he works in the surveyed school year, working age, etc.). The second set represents the indirect measurement of the dependent variable (the frequency and duration of the OGDP for each month). The third set presents independent variables (opinion, knowledge, environment and management support), measured through 5 theoretically, equally strong indicators.

Organization and process of data collection

The questionnaires were handed out having been agreed upon with the heads of kindergartens. Data were collected for the previous school year 2016/2017, in September and October 2017. The educators volunteered and anonymously participated in questionnaires.

Methods of data processing

We entered the acquired data into Excel and then processed it with the SPSS program (version 23). Data were processed in several successive phases. In the first phase, the frequencies of individual responses were calculated using the Frequencies subroutine. On numerical and other appropriately transformed variables, we calculated the descriptive statistics with the Descriptives subroutine. On the basis of the results obtained at this stage, the corresponding hypotheses for the verification of hypotheses were made, which equally included several components of each set. On the basis of previous research and accessible literature, we constructed the following variables: management support, environment, knowledge and opinion. The influence of the selected factors was measured by regression analysis. We assumed hypotheses at a level of 5% risk.

Results

With multiple regression, we wanted to determine the possible relationship between the frequency and duration of OGDP and some indicators of knowledge, opinion, environment and management support. We compiled two models (Figure 1), which we separately checked with multiple regression.

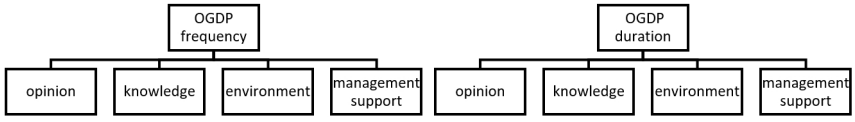

Figure 1: Model of explaining how the frequency and duration of OGDP implementation are influenced by knowledge, opinion, environment and management support.

The results showed a statistically significant correlation between the above-mentioned indicators and the frequency of performance of OGDP as well as between them and the duration of OGDP.

Table 1: Contribution of individual variables to the formation of the regression equation for both models.

OGDP frequency	*Standardized ß coefficient*	*T-test*	*Statistical significance*
knowledge	.277	4.551	.000*
the environment	.684	12.379	.000*
opinion	.047	.847	.399
management support	.066	1.141	.256
OGDP duration	*Standardized ß coefficient*	*T-test*	*Statistical significance*
knowledge	.357	4.105	.000*
the environment	.016	.200	.842
opinion	.083	1.050	.296
management support	.318	3.840	.000*

*Legend: standardized ß coefficient – standardized coefficients of partial regression of the variable to a criterion variable (beta weight); t-test – statistical significance of regression coefficients; statistical significance – at the level of 5 risk ($p \leq 0.05$) **

Table 1 shows the contribution of each independent variable to the formation of the regression equation. Standardized beta coefficients represent the significance of individual predictors, and the T-test shows the statistical significance of the regression coefficients of these explanatory variables. It can be noted that the frequency of OGDPs is statistically and significantly influenced by the knowledge of the educators and the environment of the kindergarten, while the duration of OGDP is influenced by the support of the management in addition to knowledge.

Table 2: A summary of all three estimated regression models.

Model	*R*	*R^2*	*Fixed R^2*	*F-test*	*Statistical significance*
(P) OGDP frequency	.8[3]3a	.694	.684	69.745	.000*
(T) OGDP duration	.614[a]	.377	.357	18.630	.000*
P x T OGDP	.615[a]	.378	.358	18.700	.000*

*Legend: R – multiple regression coefficient; R2 – multiplier determination coefficient, corrected R2 – multiplier determining coefficient indicating the proportion of variance in the dependent variable, explained by the variability of the number of independent variables; F-test – statistical significance of the regression equation; statistical significance – at the level of 5 risk ($p \leq 0.05$) **

The deterministic coefficient R2 shows that the included explanatory variables explain 37.8% of the variance of the dependent variable. Corrected R2, which eliminates the influence of a number of explanatory variables, shows that 35.8% of the variance is explained. Despite a relatively small proportion, the F-test reliability of the regression equation shows its high statistical significance.

On the basis of the obtained results, we explained both common and the two separate models, which explain the dependent variable "frequency and duration" of the performance of OGDP, explained by four independent variables, them being knowledge, environment, opinion and management support. From the analysis of the results of multiple regression we can understand that those children whose educators have greater knowledge will spend more and more time in nature more often. Furthermore, the children from kindergartens where leadership provides more support to educators will spend more time in nature. More often will be in nature the children of those kindergartens that have better conditions for access to nature.

Discussion

The results of our research show that the frequency and duration of OGDP are mainly influenced by the knowledge of educators, the environment and the support of management. In the discussion, we therefore want to highlight three aspects of the data obtained. The first aspect is the reflection on the importance of the educators' opinions, which in none of the comparisons proved to be a statistically significant factor in the impact on OGDP. Another aspect of thinking is the knowledge of educators. For both frequency and duration, this aspect is always statistically significant. And the third aspect is thinking about the differences between the environment and the support of the management. The environment is important in the frequency of performance of OGDP, while the importance of support for management is affected by the duration of OGDP.

Some previous studies have shown that the opinion of educators is related to the performance of activities of movement (Marinšek and Kovač, 2018). Other research also found, directly or indirectly, that subjective theories, especially in an open curriculum, lead the educator into the guidance of the pedagogical process (Gregorc et al, 2012; Malčič and Marič-Jurisin, 2017). We believe that the fact that our results did not show a connection between the opinion of educators and the frequency or rather the duration of OGDP, clearly indicate the professionalism of educators in their work.

Many researchers have studied the importance of the knowledge point of view (Zuljan and Trošelj, 2014). The professional development of the educator has become a necessity since society has changed extremely and dynamically in the last decades, and the new discoveries in the field of neuroscience are changing and the importance of appropriate incentives in the preschool period is confirmed by the thought: "The smaller the child is, the more we need

to know about him" (Krstović, 2009). Zuljan and Trošelj (2014) argue that the range of skills that the educator has to master in order to provide the child with optimal opportunities to realize his capacities is probably greater than in the elderly. Our results show that knowledge statistically and significantly affects both the frequency and duration of OGDP. From this, we deduce the importance of expanding seminars of continuous professional education with modern, new, innovative professional and scientifically supported content.

The third aspect is the importance of management support, which is partly already linked to the previous conclusion. Support for leadership in encouraging and facilitating continuous professional development is also important in providing knowledge to educators on the one hand, as well as for the duration of the OGDP on the other.

Conclusions

The synthesis of results leads us to think that the environment in which kindergartens work contributes to longer-term OGDPs by allowing educators to perform OGDP more often, and on the basis of better management support and the provision of more in-depth knowledge, even to those educators working in kindergartens with less favourable conditions for the performance of OGDP.

References

GREGORC, J., VIDEMŠEK, M., ŠTIHEC, J., KARPLJUK, D., TUŠAK, M. and MEŠKO, M., 2012. *Življenjski* slog vzgojiteljev in pomočnikov vzgojiteljev kot element subjektivnih teorij. *Zdravstveno Varstvo*, vol. 2, no. 51, pp. 95–104.

GYÖREK, N., 2013. Gozdna pedagogika v Sloveniji – priložnost za povezovanja in nova znanja. Gozdarski vestnik, *Zveza gozdarskih društev Slovenije,* vol. 71, no. 4, pp. 225–235.

KNIGHT, T. M., BOWLER, D. E., BUYUNG-ALI, L. M., KNIGHT, T. and PULLIN, A. S., 2010. A systematic review of evidence for the added benefits to health of exposure to natural environments. *BMC Public Health,* vol. 10, 456. DOI: 10.1186/1471-2458-10-456

KOLLE, E., STEENE – JOHANNESSEN, J. and ANDRESSEN, L. B., 2009. Low muscle fitness is assiciated with metabolic risk in youth. *Medicine and Science in Sports Exercise*, vol. 41, pp. 1361-1367.

KRIVOKAPIĆ, D. RADULOVIĆ, B. and KRIVOKAPIĆ, O., 2014. Subjective and objective estimation of the level of physical education in service of conserving health status improvement. *Sport mont journal*, vol. 12, no. 40-41, pp. 209-216.

KRSTOVIĆ J., 2009. *Odrazi sveučilišnog obrazovanja odgajatelja na koncept novog profesionalizma: izazovi i dileme*. Available from: http://www.ecnsi.hr/wp-content/uploads/2011/02/ECNSIzd2009 pedagogija_hrv.pdf

KUPEC, L., 2016. *Povezanost med količino in intenzivnostjo gibalne/športne ake tivnosti ter gibalnimi sposobnostmi otrok starih od 6 do 9 let: magistrsko delo*. Ljubljana: Univerza v Ljubljani: Pedagoška fakulteta.

MALČIČ, B. and MARIČ-JURISIN, S., 2017. Physical activity as an educational dimension in the contemporary pre-school curricula in the world and in Serbia. *Journal of Physical Education and Sport ® (JPES)*, vol. 17, no. 1, pp.40 – 47. DOI:10.7752/jpes.2017.s1007

MARINŠEK, M. and KOVAČ, M., 2018. Beliefs of Slovenian early childhood educators regarding the implementation of physical education. *European physical education review*, pp. 1-16, doi: 10.1177/1356336X18761538.

PIŠOT, R., ZAVRŠNIK, J. and KROPEJ, L. V., 2005. *Gibalna/športna aktivnost za zdravje otrok in mladostnikov*. Koper: Univerza na Primorskem: Znanstveno-raziskovalno središče, Inštitut za kineziološke raziskave, Univerzitetna založba Annales.

PIŠOT, R., PLEVNIK, M. and ŠIMUNIČ, B., 2010. Gibalna/*športna* dejavnost kot dejavnik trajnostnega razvoja in kakovosti *življenja* sodobnega *človeka*: pozni ukrepi zgodnjih opozoril. In: Duh, M. (ur.), *Okolje kot edukacijska vrednota: znanstvena monografija*. Maribor, RIS Dvorec Rakičan, pp. 105–121.

RETAR, I., PLEVNIK, M. and JELOVČAN, G, 2012. Kompetentno poučevanje gibalnih/*športnih* aktivnosti otrok s posebnostmi v gibalnem razvoju kot naložba za ohranjanje kakovosti *življenja* v pozni starosti. In: Pišot, R. et al. (ur.), *Otrok v gibanju za zdravo staranje : prispevki = Child in motion for healthy aging : contributions*. Koper: Univerza na Primorskem, Znanstveno-raziskovalno središče, Univerzitetna založba Annales.

ŠKOF, B., 2007. *Šport po meri otrok in mledostnikov: pedagoško-psihološki vidik kondicijske vadbe mladih*. Ljubljana: Fakulteta za *šport*.

THOMPSON COON J., BODDY, K., STEIN, K., WHEAR, R., BARTON, J. and DEPLEDGE, M.H., 2011. Does participating in physical activity in outdoor natural environments have a greater effect on physical and mental wellbeing than physical activity indoors? A systematic review. *Environmental Science & Technology*, vol. 45, no. 5, pp. 1761–1772.

VALENČIČ ZULJAN, M. and BLANUŠA TROŠELJ, D., 2014. Profesionalni razvoj vzgojiteljev z vidika vzgojiteljevih pojmovanj. *AS. Andragoška spoznanja*, vol. 20, no. 1, pp. 43–60.

VOLJČ, B., 2015. *Aktivno in zdravo staranje za aktivno in zdravo starost. Analitsko poročilo DP4 projekta AHA.SI*. Ljubljana: Inštitut Emonicum za zdravo in aktivno *življenje*.

VOLMUT, T., 2014. *Z merilnikom pospeška izmerjena gibalna športna aktivnost mlajših otrok in analiza izbranih intervencij: Doktorska disertacija*. Koper: Univerza na Primorskem, Pedagoška fakulteta

VOLMUT, T., PIŠOT, R. and ŠIMUNIČ, B., 2013. Objectively measured physical activity in children aged from 5 to 8 years. *Zdravstveno varstvo*, vol. 52, no. 1, pp. 9–18.

Health of Slovene children and adolescents - new challenges in the »online« world

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Abstract

Introduction: Fast technological changes and the increase in time spent »online« lead to new challenges affecting health behaviours and can results in health problems among children and adolescents. The aim of the study is to research some characteristics of new »online« risk behaviours and possible symptoms of addiction in adolescents in Slovenia. *Methods:* Nationally representative sample of 11-, 13-, 15- and 17-year-old students (n=7449) from the international, cross-sectional 2018 Health Behaviour in School-Aged Children research was used. Data were analysed using SPSS 25. Chi-square and multivariate logistic regression were conducted. *Results:* Preliminary data show that 5.1% of children and adolescents were lately cyberbullying others and 12.4% were cyberbullied (more boys and more 15-year-olds). One fifth of adolescents (more boys) reported that they find it easier to talk about their secrets, feelings and worries »online« compared to "in vivo". 8.3% of adolescents (more girls) reported signs of addiction with social media and 10.2% with online gaming (more boys). These behaviours were more prevalent in adolescents with lower self-rated socio-economic position of their family. *Discussion and conclusion:* Not only in other countries, but also in Slovenia new »online« risk behaviours and addictions are emerging. Results of the study may serve when planning public health interventions.

Keywords: »online« *behaviours, symptoms of addiction, children and adolescents, new challenges*

Introduction

In recent years, the use of modern technologies, such as computer, smart phone and tablets (Cade & Gates, 2016), as well as the Internet and "online" activities, has been on the increase. These, as well as some other changes in the soci-

ety, affect the habits and lifestyles of adolescents and their leisure time, posing new challenges and problems with regard to health and health-related behavior. Young people use modern technologies for various online activities such as playing games, using online networks and browsing the internet, which can lead to different forms of addiction, including the common addiction to online games and social networks (Kuss & Griffiths, 2012).

The purpose of this article is to investigate the frequency of game playing, the signs of problematic use of social media and predictive factors for internet gaming disorders.

Methods

Sample and procedure

The data used in the present study was collected as part of the Health Behavior in School-Aged Children: WHO collaborative study (HBSC; see http://www.hbsc.org) in 2018. The HBSC study is a cross-national survey conducted every four years among representative samples of 11-, 13-, and 15-year-old boys and girls. In 2018, 17-year-old adolescents were included for the first time in Slovenia. An ethical approval for the survey is granted by the relevant ethics committee in each country.

The final analyzed sample consisted of 7749 students (48.7% girls and 51.3% boys). Within each respective class (in secondary schools as well as in education programs), the data was weighted by gender.

Measures and analysis

In line with the research question, with only the selected indicators being used, i.e. those that measure online activities and are significantly associated with games addiction in the literature. The model included the following independent variables: gender, age, family (family support, family conversations); school and peers (support of friends, stress at school); health outcomes (psychosomatic symptoms), health-related behaviors (sleep), and risky behaviors (beatings, maltreatment).

Descriptive and inferential statistical analysis was performed by using the SPSS 25 software. To determine the correlation between various online activities and factors, a chi-square test ($\chi 2$) was used, and the single analysis of variance was used to analyze average values. In the following part, we determined by multiple logistic regression analysis.

Results

Preliminary data show that 5.1% of children and adolescents were lately cyberbullying others and 12.4% were cyberbullied (more boys and more 15-year-olds). One fifth of adolescents (more boys) reported that they find it easier to talk about their secrets, feelings and worries »online« compared to "in vivo".

8.3% of adolescents (more girls) reported signs of addiction with social media and 10.2% with online gaming (more boys). These behaviours were more prevalent in adolescents with lower self-rated socio-economic position of their family.

We carried out a multiple logistic regression; the results are shown in Table 1.

Table 1: Results of the multiple logistic regression analysis – signs of Internet Gaming Disorders (5 to 9).

	Parameter estimation (B)	*Statistical significance*	*Prospect ratio (B)*	*95% confidence interval*	
				Lower limit	*Upper limit*
Sex					
Boys	1.507	<0.001	4.512	3.319	6.135
Age					
13 years	0.108	0.492	1.114	0.819	1.515
15 years	-0.100	0.570	0.905	0.642	1.276
17 years	-0.201	0.273	0.818	0.571	1.171
Communication with mother					
Hard or very hard	0.191	0.190	1.210	0.910	1.609
Communication with father					
Hard or very hard	0.360	0.005	1.433	1.114	1.845
At least 2 psychosomatic symptoms occurring more than once per week					
Yes	0.596	<0.001	1.815	1.427	2.307
Having been beaten at least 3 times in the last 12 months					
Yes	0.150	0.319	1.162	0.865	1.560
Having bullied others at least 2 times per month in the last couple of months					
Yes	0.835	<0.001	2.304	1.723	3.081
Having been bullied at least once in the last couple of months					
Yes	0.284	0.019	1.328	1.047	1.685
Burden of the school work					
Very or somewhat	0.331	0.004	1.392	1.110	1.746
Having slept 9 hours during school days					
No	0.447	0.007	1.564	1.131	2.163
Family support	-0.027	0.311	0.973	0.924	1.026

	Parameter estimation (B)	*Statistical significance*	*Prospect ratio (B)*	*95% confidence interval*	
				Lower limit	*Upper limit*
Support by friends	-0.141	<0.001	0.869	0.818	0.922

Reference groups: gender – girls; age – 11 years; communication with mother/father – easy, very easy; psychosomatic symptoms – less than two; beatings – less than 3 times in the past months; abuse – no; was abused – no; school workload – little or none; sleep – 9 hours or more.

Higher prospects for addiction to games among adolescents include boys who have trouble communicating with their father, who experience at least 2 or more psychosomatic symptoms more than once a week, who abuse or were abused, who are more pressured by school work and those who have little support from friends.

Discussion

Our findings were comparable with the results of foreign research. We found that male adolescents more often play computer games than female (Terlecki, et al., 2011; Durkee, et al., 2012). Some studies attribute this feature to the androgynous design of traditional computer games (O'Brien, Issartel & Belton, 2018). Adolescents showing several psychomotor symptoms who are burdened by school work and sleep less are more likely to develop addiction to games. This is consistent with findings from other studies (Hellström, et al., 2015, Choi, et al., 2009). In this regard, the source of such negative outcomes can be directly related to the playing of computer games, where screen light affects sleep (Smyth, 2007), while the inactive leisure time can be directly linked to the occurrence of psychosomatic disorders (Hellström, et al., 2015). Maltreatment turned out to be an important predictor, but not also the beating. Some recent studies confirm the link between both violent behavior and the playing of computer games with violent content (Ferguson & Kilburn, 2009; Greitemeyer, 2018), while others reject this connection (Przybylski & Weinstein, 2019). However, it is well-known that the effect of violent behavior due to playing computer games with violent content is influenced by several factors, such as gender (Shibuya, et al., 2008), family and family relationships (Fikkers, et al., 2013), and identification with the game's lead character (Krahé, 2014).

Peer support (or the lack of it) also proved to be an important factor. Some studies showed that adolescents who do not have many friends and experience difficulties in establishing relationships with other people play computer games more frequently and for longer periods (Griffiths & Meredith, 2009; Walther, et al., 2012). On the other hand, the Frostling-Henningsson study (2009) pointed out that the motivation of players to participate in group online games is stronger due to the sense of connection and building the relationship with team players.

Those adolescents who spend more time playing computer games are expected to have poorer relationships with their parents than those who play computer games less frequently (Richards, et al., 2010). The reason for resorting to playing computer games can be in experiencing bad relationships and communication with parents; with such behavior, the adolescents can escape their parents at least temporarily (also known as "escapism") (Kim, et al., 2009; Lemmens et al., 2011b). Participants in studies also said that it was easier for them to establish and maintain a conversation in the world of video games and that a sense of connection and increased collective consciousness in a virtual environment meant a lot to them (Williams, 2006; Smyth, 2007; Hussain and Griffiths, 2008). In the present study, communication with the father proved to be important, whereas this was not the case when it comes to communication with the mother or family support, which is difficult to explain. Additional research would therefore be required.

Conclusions

The study has shown that the playing of computer games is associated with several factors, indicating that the continuation of research with an integrated approach would be both sensible and necessary. The findings can serve well in future preventive actions and in the planning of targeted interventions.

References

CHOI, K., SON, H., PARK, M., HAN, J., KIM, K., LEE, B., GWAK, H., 2009. Internet overuse and excessive daytime sleepiness in adolescents. Psychiatry and Clinical Neurosciences, vol. 63, no. 4, pp. 455462.

DURKEE, T., KAESS, M., CARLI, V., PARZER, P., WASSERMAN, C., FLODERUS, B. D., APTER, A., BALAZS, J., BARZILAY, S., BOBES, J., et al. 2012. Prevalence of pathological internet use among adolescents in Europe: demographic and social factors. Addiction, vol. 107, no. 12, pp. 22102222.

FERGUSON, C. J., and KILBURN, J., 2009). The Public Health Risks of Media Violence: A Meta-Analytic Review. The Journal of Pediatrics, vol. 154, no. 5, 759763.

FIKKERS, K., TAYLOR, P. J., WEEDA, W., VOSSEN, H. and VALKENBURG, P., 2013. Double Dose: High Family Conflict Enhances the Effect of Media Violence Exposure on Adolescents' Aggression. Societies, vol. 3., no. 3, pp. 280292.

FROSTLING-HENNINGSSON, M., 2009. First-Person Shooter Games as a Way of Connecting to People: "Brothers in Blood." CyberPsychology & Behavior, vol. 12, no. 5, pp. 557562.

GREITEMEYER, T., 2018. The spreading impact of playing violent video games on aggression. Computers in Human Behavior, vol. 80, pp. 216219.

GRIFFITHS, M. D. and MEREDITH, A., 2009. Videogame Addiction and its Treatment. Journal of Contemporary Psychotherapy, vol. 39, no. 4, pp. 247253.

HELLSTRÖM, C., NILSSON, K. W., LEPPERT, J. and ÅSLUND, C., 2015. Effects of adolescent online gaming time and motives on depressive, musculoskeletal, and psychosomatic symptoms. Upsala Journal of Medical Sciences, vol. 120, no. 4, pp. 263275.

HUSSAIN, Z. and GRIFFITHS, M. D., 2008. Gender swapping and socializing in cyberspace: an exploratory study. Cyberpsychology & Behavior, vol. 11, no. 1, pp. 4753.

KIM, J., LAROSE, R. and PENG, W., 2009. Loneliness as the cause and the effect of problematic Internet use: The relationship between Internet use and psychological well-being. CyberPsychology & Behavior, vol. 12, pp. 451 455.

KRAHÉ, B., 2014. Media violence use as a risk factor for aggressive behaviour in adolescence. European Review of Social Psychology, vol. 25, no. 1, pp. 71106.

KUSS, D. J. and GRIFFITHS, M. D., 2012. Online gaming addiction in children and adolescents: A review of empirical research. Journal of Behavioral Addictions, vol. 1, no. 1, pp. 322.

LEMMENS, J. S., VALKENBURG, P. M. and PETER, J., 2011. Psychosocial causes and consequences of pathological gaming. Computers in Human Behavior, vol. 27, no. 1, pp. 144152.

O'BRIEN, W., ISSARTEL, J. and BELTON, S., 2018. Relationship between Physical Activity, Screen Time and Weight Status among Young Adolescents. Sports, vol. 6, no. 3, pp. 57. [viewed 13 June 2019]. Available from: https://doi.org/10.3390/sports6030057

PRZYBYLSKI, K. A. and WEINSTEIN, N., 2019. Violent video game engagement is not associated with adolescents' aggressive behaviour: evidence from a registered report. Royal Society, vol. 6, no. 2. [viewed 13 June 2019]. Available from: https://royalsocietypublishing.org/doi/10.1098/rsos.171474

RICHARDS, R., MCGEE, R., WILLIAMS, S. M., WELCH, D., & HANCOX, R. J., 2010. Adolescent Screen Time and Attachment to Parents and Peers. Archives of Pediatrics & Adolescent Medicine, vol. 164, no. 3, pp. 258262.

SHIBUYA, A., SAKAMOTO, A., IHORI, N. and YUKAWA, S., 2008. The effects of the presence and contexts of video game violence on children: A longitudinal study in Japan. Simulation & Gaming, vol. 39, no. 4, pp. 528539.

SMYTH, J. M., 2007. Beyond self-selection in video game play: an experimental examination of the consequences of massively multiplayer online

role-playing game play. Cyberpsychology & Behavior, vol. 10, no. 5, pp. 717721.

TERLECKI, M., BROWN, J., HARNER-STECIW, L., HANNUM, J., MARCHETTO-RYAN, N., RUHL, L. and WIGGINS, J., 2011. Sex Differences and Similarities in Video Game Experience, Preferences, and Self-Efficacy: Implications for the Gaming Industry. Current Psychology, vol. 30, no. 1, pp. 2233.

WALTHER B., MORGENSTERN M. and HANEWINKEL R., 2012. Co-occurrence of addictive behaviours: personality factors related to substance use, gambling and computer gaming. Eur. Addict. Res, vol. 18, no. 4, pp. 167174.

WILLIAMS, D., 2006. Groups and goblins: the social and civic impact of an online game. Journal of Broadcasting & Electronic Media, vol. 50, no. 4, pp. 651670.

Authoritative parenting moderates the impact of perceived discrimination on health

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Abstract

Introduction: Parents play a crucial role in well-being of their children. Previous studies have indicated that authoritative parenting is especially conducive to healthy offspring development. In addition, parenting styles may also play a protective role in the negative impact of various children's stressors. One such stressor is the experience of not being treated fairly/equally in one's social environment, i.e., being discriminated against. The purpose of our study was to examine 1) whether authoritative parenting style impacts youth's subjective health and substance use; 2) whether perceived discrimination (PD) impacts subjective health and substance use; and 3) whether authoritative parenting moderates the impact of PD on health and substance use. *Methods:* We examined survey data from a representative sample of Slovenian young people aged 16–27 in 2013 (Flere et al., 2014; N = 907; 48.3 % women). *Results:* Authoritative parenting was associated with better health and less frequent substance use. In addition, PD had a significant negative impact on health, but not on substance use. Finally, authoritative parenting styles moderated the impact of PD on health by dampening the negative impact of PD on health. *Conclusion:* Authoritative parenting is an important protective resource within the family that improves health of young people and reduces the impact of stressors on health.

Key words: parenting styles, family socialization, perceived discrimination, subjective health, substance use.

Introduction

Authoritative parenting style, health and drug use

The way parents raise their children impacts youth's health and well-being outcomes (Baumrind, 1966; Darling and Steinberg, 1993). Parenting styles can be

defined as "elements that combine to create the emotional climate in which parents communicate their attitudes about their child […] conveyed through body language, temper, tone of voice, emotional displays, and quality of attention." (Bornstein and Zlotnik, 2008: 497; also see Darling and Steinberg, 1993: 488). Research shows that authoritative parenting (characteristic of parents who exhibit responsiveness/warmth and demandingness/strictness toward the child) is most favourable for child and adolescent well-being (Baumrind, 1968; Maccoby and Martin, 1983; Steinberg, 2001; Steinberg and Morris, 2001). For example, it is positively associated with young person's health, self-esteem and life-satisfaction, and lowers the likelihood of depression (Milevsky et al., 2007; Zahra et al., 2013) and is linked to other positive developmental outcomes (Hancock Hoskins, 2014). It is also associated with better academic outcomes (Dornbusch et al., 1987; Majumder, 2016; Cupar, 2018) and lower rates of deviant behaviour (Rhucharoenpornpanich et al., 2010), including substance use (Becoña et al., 2012; Calafat et al., 2014).

Perceived discrimination, health and substance use

Parenting is important not only for child's wellbeing, but it may also play an important role in dealing child's other experiences. One of them is perceived discrimination, which is one's perception of how unfairly s/he is being treated within the social environment, usually due to his/her personal attributes, such as gender, age, race/ethnicity, or other personal characteristics (Kessler et al., 1999). Perceived discrimination has previously been found to be linked with numerous negative health outcomes, including with low mental and physical health (Kessler et al., 1999; Pascoe and Smart Richman, 2009). In a meta-analt ysis of the negative impact of perceived discrimination on mental and physical health, Pascoe and Smart Richman (2009) summarize key findings of studies on discrimination, emphasizing that perceived discrimination is a social stressor, and these increase the risk for health problems (Pearlin, 1999). One of the mechanisms entails discrimination triggering *more frequent* and *more reactive* physiological responses, which can have a negative effect on health (e.g., elevated blood pressure, heart rate, and cortisol levels). This may, in turn, decrease individual's protective resources, such as individual's self-control, thereby increasing the likelihood of unhealthy behaviours, which may act as coping mechanisms for dealing with discrimination (Pascoe and Richman, 2009; Major et al., 2018). In fact, increased likelihood of drug use when experiencing more frequent discrimination is well-established finding in the literature (Pascoe and Richman, 2009; Clark, 2014; Gibbons and Stock, 2018; Neuberg and Kenrick, 2018).

The moderating role of authoritative parenting in perceived discrimination, health and substance use links

Despite negative effects of discrimination on health, numerous studies have indicated that one's personal or group resources may attenuate discrimination's

negative health consequences (Williams and Mohammed, 2009). For example, social resources in the form of social support and high-quality relationships with others may buffer the negative impact of discrimination (Walsh et al., 2018) and other stressors (Uphoff et al., 2013) on health and risk behaviours (Hochbaum and Lauer, 2013; Walsh et al., 2018; also see Gibbons and Stock, 2018). In fact, supportive parent–child relationships, which includes parental emotional and instrumental support, may ameliorate the impact of life stressors on children's wellbeing by promoting protective competencies within the child (Wills and Cleary, 1996). Supportive parenting also attenuates the negative impact of perceived discrimination on substance use (Barton and Brody, 2017).

Aim of the study

The aim of our study was to examine the interplay between authoritative parenting style, perceived discrimination, health and substance use in a representative sample of Slovenian youth (Flere et al., 2014). We also examined whether parental resources in the form of authoritative parenting attenuate negative health consequences of discrimination on health and substance use.

Method

Data

We used a representative national sample of Slovenian youth (16-27 year-olds) from studies implemented by Friedrich-Ebert-Stiftung in 2013.

Measures

We measured subjective health of Slovenian youth with five indicators. Four of them have previously been used and described in Kirbiš and Tavčar Krajnc (2014) and Kirbiš and Tement (2014). First, we measured self-rated health: "In general, how would you rate your health? Would you say it is?" (1 = poor; 5 = excellent). Second, a single-item self-reported depression measure was used: "How much did the following statement apply to you over the past week?" "In the past week I felt sad and depressed" (1 = did not apply to me at all, 4 = applied to me very much). Third, self-rated mental health was measured with the following question: "In general, would you say your mental health is...?" (1 = poor; 5 = excellent). Fourth, we included a single-item on frequency of self-perceived stress (1 = "never or a few times per year"; 5 = "most days per week"). Finally, we also asked about life-satisfaction with a standard question: "How satisfied are you with your life?" (1 = completely dissatisfied; 10 = completely satisfied). Where needed, items were recoded so higher values indicate better health. We then standardized all five items and created a summation variables called subjective health (Cronbach alpha = 0.67).

We measured substance use with three question on frequency of drinking alcohol, smoking marijuana/hashish and using hard drugs (such as co-

caine, heroin, "speed", LSD, ecstasy, etc.)?" We standardized all three items and created a summation variable (Cronbach alpha = 0.53).

We measured authoritative parenting style with three items on a 5-point Likert scale (1 = "very uncharacteristic of me"; 5 = "very characteristic of me"). Three items were adapted from previous studies of parenting practices by Robinson and colleagues (1995), including one in a cross-cultural setting (Robinson et al., 1996). Three authoritative parenting style items were: "My parents were aware of my problems or concerns about school; "My parents gave me reasons why rules should be obeyed" and "My parents allowed me to give input into family rules". Cronbach alpha of the three-item measure in our study was 0.68.

We measured frequency of perceived discrimination with seven items, i.e. reasons for perceived discrimination. The question asked was: "How often do you feel discriminated against for one of the following reasons?" The frequency of perceived discrimination (0 = "neve"r; 4 = "frequently") was examined based on the following seven perceived reasons of discrimination: gender, (socio)economic status (SES), religious affiliation, ethnicity/nationality, educational level, political affiliation and regional origin. We created summation scale to calculate the *number of stated reasons for discrimination* for each respondent (variety of perceived discrimination). The scale had a minimum value of 0 (i.e., a person who was "never" discriminated against for *none* of the seven stated reasons) and maximum value of 7 (i.e., a person who was "at least rarely (or more frequently)" discriminated against for *each of the seven* stated reasons). The summation variable thus indicates the number of different types of discrimination a person experiences. Cronbach alpha of the seven-item measure was 0.77.

Age, gender, maternal and paternal education, self-assessed family material status and size of residential settlement were entered as controls in our multivariate regression models.

Results

We first examined whether authoritative parenting style and perceived discrimination impact youth's subjective health and substance use. Table 1 shows that youth high on authoritative parenting report better subjective health (B = 0.18; $p < 0.001$; first column) and less substance use (B = -0.16; $p < 0.001$; second column). In addition, perceived discrimination decreases subjective health (B = -0.11; $p < 0.001$; third column), but has no impact on substance use ($p > 0.05$; fourth column).

Table 1: The impact of authoritative parenting style and perceived discrimination on subjective health and substance use

	Subjective health	*Substance use*	*Subjective health*	*Substance use*
Age	-0.05	0.17***	-0.05	0.17***
Gender (female)	-0.28***	-0.14***	-0.17***	-0.16***
Size of residential settlement	0.04	-0.08*	0.03	-0.06
Maternal education	-0.09*	0.08*	-0.09*	0.07
Paternal education	0.06	0.11**	0.08*	0.11**
Family SES	0.24***	0.06	0.26***	0.05
Authoritative parenting	0.18***	-0.16***	/	/
Perceived discrimination	/	/	-0.11***	0.01
F / Sig.	21.48***	14.38***	17.40***	7.5***
Adjusted R^2	14.7	10.1	12.5	12.1

Source: Flere et al. (2014).
*Notes: *p < 0.05; **p < 0.01; *** p < 0.001. Values in cursive are standardized coefficients.*

We also examined whether authoritative parenting moderates the impact of perceived discrimination on health and substance use. We split the respondents in two groups: low- and high-authoritative parenting group according to median value. Table 2 shows the negative impact of perceived discrimination on subjective health in low-authoritative group (B = -0.13; $p < 0.001$; first column) and no impact in high-authoritative groups ($p > 0.05$; second column). In addition, there is no significant impact of discrimination on substance use in either low-authoritative group or high-authoritative group ($p > 0.05$). In sum, these results indicate that authoritative parenting attenuates the negative impact of discrimination on subjective health, but does not moderate discrimination-substance use link, which remains insignificant in both groups.

Table 2: The impact of perceived discrimination on subjective health and substance use in low-authoritative and high-authoritative parenting group

	Subjective health (low authoritative)	*Subjective health (high authoritative)*	*Substance use (low authoritative)*	*Substance use (high authoritative)*
Age	-0.05	-0.05	0.15**	0.20***
Gender (female)	-0.19***	-0.18***	-0.18***	-0.11*
Size of residential settlement	0.02	0.08	-0.06	-0.09
Maternal education	-0.11*	-0.07	0.13*	0.02
Paternal education	0.06	0.08	0.04	0.20***
Family SES	0.28***	0.19***	0.10*	0.01
Perceived discrimination	-0.13**	-0.07	-0.01	0.02
F / Sig.	11.76***	6.03***	5.12***	6.54***

	Subjective health (low authoritative)	*Subjective health (high authoritative)*	*Substance use (low authoritative)*	*Substance use (high authoritative)*
Adjusted R^2	15.4	8.3	6.5	9.0

Source: Flere et al. (2014).
*Notes: *p < 0.05; **p < 0.01; *** p < 0.001. Values in cursive are standardized coefficients.*

Discussion and conclusion

The negative impact of perceived discrimination on health in our study is consistent with other research (Pascoe and Smart Richman, 2009), yet unexpectedly, perceived discrimination seems to have no impact on substance use (compare with Clark, 2014). We also found that authoritative parenting has a two-fold role: it increases subjective health and decreases substance use (Maccoby and Martin, 1983; Steinberg and Morris, 2001; Milevsky et al., 2007; Clark, 2014), while it also attenuates the negative impact of perceived discrimination on health and substance use (Wills and Cleary, 1996; Barton and Brody, 2017).

Our findings could have implications for preventative programmes by suggesting that potential interventions in diverse areas, such as public health and social inequalities (subjective health, substance use and perceived discrimination) should all have a common focus – socialization patterns within, but probably also outside the family. Specifically, interventions in family, school and out-of-school programmes should take into account the importance of supportive, authoritative parenting. Furthermore, future studies should delve into the issue of 1) whether authoritative styles outside of family have a similar beneficial impact as authoritative parenting; 2) what is the impact of outside-of-family socialization patterns compared to parenting practices; and 3) can the negative consequences of lack of authoritative parenting be somewhat diminished by authoritative adults outside of the family. In conclusion, our study indicates authoritative parenting is an important protective family resource that improves subjective health of young people and reduces the impact of social stressors on health.

References

BARTON, A. W. and BRODY, G. H., 2018. Parenting as a buffer that deters discrimination and race-related stressors from "getting under the skin": Theories, findings, and future directions. In: MAJOR, B., DOVIDIO, J. F. and LINK, B. G., eds. *The Oxford handbook of stigma, discrimination and health* [online]. New York, NY: Oxford University Press, pp. 335–354. [viewed 26 June 2019]. Available from: doi:10.1093/oxfordhb/9780190243470.013.21

BAUMRIND, D., 1966. Effects of authoritative parental control on child behavior. *Child Development*, vol. 37, no. 4, pp. 887–907.

BAUMRIND, D., 1968. Authoritarian vs. authoritative parental control. *Adolescence*, vol. 3, no. 11, pp. 255–272.

BECOÑA, E., MARTÍNEZ, Ú., CALAFAT, A., JUAN, M., FERNÁNDEZ-HERMIDA, J. R. and SECADES-VILLA, R., 2012. Parental styles and drug use: A review. *Drugs: Education, Prevention and Policy*, vol. 19, no. 1, pp. 1–10.

BORNSTEIN, M. H. and ZLOTNIK, D., 2008. Parenting Styles and their Effects. In: HAITH, M. M. and BENSON, J. B., eds. *Encyclopedia of Infant and Early Childhood Development*. London: Academic, pp. 496–509.

CALAFAT, A., GARCIA, F., JUAN, M., BECONA, E. and FERNANDEZ-HERMIDA, J. R., 2014. Which parenting style is more protective against adolescent substance use? Evidence within the European context. *Drug and Alcohol Dependence*, vol. 138, pp. 185–192.

CUPAR, T., 2018. Vloga vzgojnih stilov pri šolskih izidih mladih. Šolsko svetovalno delo, vol. 2.

CLARK, T. T., 2014. Perceived discrimination, depressive symptoms, and substance use in young adulthood. *Addictive Behaviors*, vol. 39, no. 6, pp. 1021–1025.

DARLING, N. and STEINBERG, L., 1993. Parenting style as context: An integrative model. *Psychological Bulletin*, vol. 113, pp. 487–496.

DORNBUSCH, S. M., RITTER, P. L., LEIDERMAN, P. H., ROBERTS, D. F. and FRALEIGH, M. J., 1987. The relation of parenting style to adolescent school performance. *Child Development*, vol. 58, pp. 1244–1257.

ELO, A. L., LEPPÄNEN, A. and JAHKOLA, A., 2003. Validity of a Single-Item Measure of Stress Symptoms. *Scandinavian Journal of Work, Environment & Health*, vol. 29, no. 6, pp. 444–451.

FLERE, S., KLANJŠEK, R., LAVRIČ, M., KIRBIŠ, A., TAVČAR KRAJNC, M., DIVJAK, M., BOROJA, T., ZAGORC, B., and NATERER, A. 2014. Slovenian Youth 2013: Living in times of disillusionment, risk and precarity [datafile]. Ljubljana: Univerza v Ljubljani, Arhiv družboslovnih podatkov. ADP - IDNo: MLA13. Available from: http://www.adp.fdv.uni-lj.si/opisi/mla13/.

GIBBONS, F. X. and STOCK, M. L., 2018. Perceived Racial Discrimination and Health Behavior: Mediation and Moderation. In: MAJOR, B., DOVIDIO, J. F. and LINK, B. G., eds. *The Oxford handbook of stigma, discrimination and health* [online]. New York, NY: Oxford University Press, pp. 355–376. [viewed 26 June 2019]. Available from: doi: 10.1093/oxfordhb/9780190243470.013.17

HOCHBAUM, C. V. and LAUER, S. R., 2013. *Perceived Discrimination and Health: The Mediating Effect of Social Capital* [online]. [viewed 26 June 2019]. Available from: http://mbc.metropolis.net/assets/uploads/files/wp/2013/WP13-07.pdf

HOSKINS, H. D., 2014. Consequences of Parenting on Adolescent Outcomes. *Societies*, vol. 4, pp. 506–531.

KESSLER, C. R., MICKELSON, K. D. and WILLIAMS, D. R., 1999. The Prevalence, Distribution, and Mental Health Correlates of Perceived Discrimination in the United States. *Journal of Health and Social Behavior*, vol. 40, no. 3, pp. 208–230.

KIRBIŠ, A. and TAVČAR KRAJNC, M., 2014. Socioeconomic inequalities in self-rated health, mental health and depression: Slovenian 2013 national youth study. In: MULEJ, M., HRAST, A. and KOJC, S., eds. *Health – personal and/or social responsibility?: conference proceedings = Zdravje – osebna in/ali družbena odgovornost?: zbornik prispevkov, (Zbirka Družbena odgovornost) / 9. mednarodna konferenca Družbena odgovornost in izzivi časa 2014. Maribor. 6.-7. marec 2014*. Maribor: Inštitut za razvoj družbene odgovornosti (IRDO), pp. 1–11.

KIRBIŠ, A. and TEMENT, S., 2014. Differences in perceived stress among Slovenian youth: an analysis of sociodemographic and socioeconomic predictors in the 2010 and 2013 national youth studies. In: MULEJ, M., HRAST, A. and KOJC, S., eds. *Health – personal and/or social responsibility?: conference proceedings = Zdravje – osebna in/ali družbena odgovornost?: zbornik prispevkov, (Zbirka Družbena odgovornost) / 9. mednarodna konferenca Družbena odgovornost in izzivi časa 2014. Maribor. 6.-7. marec 2014*. Maribor: Inštitut za razvoj družbene odgovornosti (IRDO), pp. 1–11.

LOVIBOND, P. F. and LOVIBOND, S. H., 1995. The Structure of Negative Emotional States: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, vol. 33, no. 3, pp. 335–343.

MACCOBY, E. E. and MARTIN, J. A., 1983. Socialization in the context of the family: Parent–child interaction. In: HETHERINGTON, E. M. and MUSSEN, P. H., eds. *Handbook of child psychology: Vol. 4. Socialization, personality, and social development.* New York: Wiley, pp. 1–101.

MAJOR, B., DOVIDIO, J. F., LINK, B. G. and CALABRESE, S. K., 2018. Stigma and Its Implications for Health: Introduction and Overview. In: MAJOR, B., DOVIDIO, J. F. and LINK, B. G., eds. *The Oxford handbook of stigma, discrimination and health* [online]. New York, NY: Oxford University Press, pp. 3–28. [viewed 26 June 2019]. Available from: doi: 10.1093/oxfordhb/9780190243470.013.1

MAJUMDER, A., 2016. The Impact of Parenting Style on Children's Educational Outcomes in the United States. *Journal of Family and Economic Issues*, vol. 37, pp. 89–98.

MILEVSKY, A., SCHLECHTER, M., NETTER, S. and KEEHN, D., 2007. Maternal and Paternal Parenting Styles in Adolescents: Associations with Self-Esteem, Depression and Life-Satisfaction. *Journal of Child and Family Studies*, vol. 16, pp. 39–47.

NEUBERG, S. and KENRICK, A. C., 2018. Discriminating Ecologies: A Life History Approach to Stigma and Health. In: MAJOR, B., DOVIDIO, J. F. and LINK, B. G., eds. *The Oxford handbook of stigma, discrimination and health* [online]. New York, NY: Oxford University Press, pp. 125-145. [viewed 26 June 2019]. Available from: doi: 10.1093/oxfordhb/9780190243470.013.5

PASCOE, E. A, and SMART RICHMAN, L., 2009. Perceived Discrimination and Health: A Meta-Analytic Review. *Psychological Bulletin*, vol. 135, no. 4, pp. 531–554.

PEARLIN, L. I., 1999. The Stress Process Revisited: Reflections on Concepts and Their Relationship. In: ANESHENSEL, C. S. and PHELAN, J. C., eds. *Handbook of the Sociology of Mental Health*. New York: Plenum Publishers, pp. 395–415.

RHUCHAROENPORNPANICH, O., CHAMRATRITHIRONG, A., FONGKAEW, W., ROSATI, M. J., MILLER, B. A. and CUPP, P. K., 2010. Parenting and adolescent problem behaviors: a comparative study of sons and daughters in Thailand. *Journal of the Medical Association of Thailand = Chotmaihet thangphaet*, vol. 93, no. 3, pp. 293–300.

ROBINSON, C. C., HART, C. H., MANDLECO, B. L. and OLSEN, S. F., 1996. Psychometric Support for a New Measure of Authoritative, Authoritarian, and Permissive Parenting Practices: Cross-Cultural Connections. Paper presented at Symposium: *New measures of parental child-rearing practices developed in different cultural contexts, XIVth Biennial International Society for the Study of Behavioral Development Conference. Quebec City, Canada. August 12–16, 1996.*

ROBINSON, C. C., MANDLECO, B., OLSEN, S. F. and HART, C. H., 1995. Authoritative, authoritarian, and permissive parenting practices: Development of a new measure. *Psychological Reports*, vol. 77, pp. 819-830.

STEINBERG, L. and MORRIS, A. S., 2001. Adolescent development. *Annual Review of Psychology*, vol. 52, pp. 83–110.

UPHOFF, E. P., PICKETT, K. E., CABIESES, B., SMALL, N. and WRIGHT, J., 2013. A Systematic Review of the Relationships Between Social Capital and Socioeconomic Inequalities in Health: A Contribution to Understanding the Psychosocial Pathway of Health Inequalities. *International Journal for Equity in Health*, vol. 12, no. 1, pp. 54.

WALSH, S. D., KOLOBOV, T. and HAREL-FISCH, Y., 2018. Social Capital as a Moderator of the Relationship Between Perceived Discrimination and Alcohol and Cannabis Use Among Immigrant and Non-immigrant Adolescents in Israel. *Frontiers in Psychology*, vol. 9, pp. 1556.

WILLIAMS, D. R., and MOHAMMED, S. A., 2009. Discrimination and Racial Disparities in Health: Evidence and Needed Research. *Journal of Behavioral Medicine*, vol. 32, no. 1, pp. 20–47.

WILLS, T. A. and CLEARY, S. D., 1996. How are social support effects mediated? A test with parental support and adolescent substance use. *Journal of Personality and Social Psychology*, vol. 71, no. 5, pp. 937–952.

ZAHRA, J., FORD, T. and JODRELL, D., 2013. Cross-sectional survey of daily junk food consumption, irregular eating, mental and physical health and parenting style of British secondary school children. *Child: care, health and development*, vol. 40, no. 4, pp. 481–491.

Hazardous polysubstance use in adolescents from Slovenia

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Abstract

Introduction: Polysubstance use in adolescence has many negative health outcomes. In Slovenia, data on single substance use are numerous; however, we lack data on polysubstance use. The aim of the study was to assess the prevalence and characteristics of regular/more hazardous polysubstance use of at least two psychoactive substances (HPU) - alcohol, tobacco, cannabis - among Slovene 15-year-old students. *Methods:* Nationally representative sample of 15-year-old students (n=1651) from the Slovenian arm of the cross-national 2014 HBSC study was used. We assessed the prevalence of HPU and used logistic regression to explore factors associated with it. *Results:* 39.7% reported frequent/more hazardous use of at least one substance, while 14.7% reported HPU. HPU was associated with individual (frequent physical fighting), peer (peer substance use, spending evening time with friends daily), school (low perceived school performance), family (less frequent family meals) and life-style factors (early sexual intercourse, irregular breakfast, daily energy drinks consumption). *Conclusions:* The scope of the problem calls for immediate action. We propose the development of common national strategy on prevention and reduction of substance use and other risk behaviours to ensure continuous implementation of effective health promotion and prevention programmes.
Key words: tobacco; alcohol; cannabis; hazardous polysubstance use; adolescents; Slovenia

Introduction

Polysubstance use (PU) in adolescents has been associated with substantial short and long term harms (EMCDDA, 2009). Researchers report high shares of PU in adolescents with alcohol, tobacco and cannabis being the most prevalent (EMCDDA, 2009). Prevention of PU in adolescence should become a pub-

lic health priority (EMCDDA, 2009) and can be improved when key factors associated with PU are identified. Studies show that PU is associated with individual, socio-economic, family, school, peer, community, mental health and lifestyle-related characteristics of adolescents (Connell, et al., 2009; Connell, et al., 2010; Harakeh, et al., 2012; Skeer, et al., 2013; de la Haye, et al., 2014; Brooks-Russell, et al., 2015; Tomczyk, et al., 2015; Chan, et al., 2017).

Data on PU for Slovenia are scarce. The aim of this study is to examine the prevalence and characteristics of regular/more hazardous PU (HPU) in adolescents in Slovenia.

Methods

Nationally representative sample of 15-year-old students from Slovenian arm of the cross-national 2014 Health Behaviour in School-Aged Children study was used. HPU was defined as reporting at least two of the following behaviours: weekly smoking, more frequent alcohol use (weekly drinking and/or drunkenness at least twice in lifetime), cannabis use 3 or more days in the last year. We assessed associations of HPU with the following groups of factors:

- individual (gender, bullied student(s) at school at least 2x/month in the past couple of months, been bullied at least 1x/past couple of months, physical fighting at least 3x/previous year, medically treated injuries in the last year, perceived body image, weight reduction behaviour, self-rated health, body mass index),
- socio-economic (parents' employment status, perceived family affluence),
- peer (friends' use of tobacco, alcohol and/or cannabis, friends' drunkenness at least 1/week, spending time with friends before 8 pm every day and/or after 8 pm every day, perceived peers' support),
- school (type of programme, perceived school performance, liking school, perceived teachers' and classmates' support),
- family (type, ease of communication with mother and father, family meals, perceived support and communication),
- mental health (feelings of depression, suicidal thoughts, at least 2 psychosomatic complaints more than once a week, problems and/or distress in one or more spheres (emotions, concentration, behaviour), strengths and difficulties questionnaire, life satisfaction),
- unhealthy lifestyle and risk behaviour (breakfast, fruit, vegetables, soft drink and/or energy drinks consumption, brushing teeth more than once a day, physically activity 7 days/week for at least 60 minutes/day, more than 4 hours/day of sedentary behaviour in free time during weekdays, sexual intercourse).

A two-step multivariate logistic regression modelling was used to estimate odds ratio (OR). First, factors associated with HPU were identified with-

in selected groups of factors and second, joint multivariate logistic regression model was applied, containing factors with statistically significant associations with HPU in the first step. Statistical analysis was performed using the IBM SPSS Statistics for Windows, version 21.0.

Results

1615 of 15-year-old students (46.1% boys) were included (40.9% grammar, 38.2% technical, 20.9% vocational school). 39.7% reported on frequent/more hazardous use of at least one substance, while 14.7% reported HPU. First step of logistic regression showed that most of the variability was explained by peer (37.2%) and lifestyle factors (27.0%). The results of the second step, that is joint model, are presented in Table 1.

Table 1: Joint multivariate logistic regression.

		OR	*95% CI*
Gender	Girls	1.00	
	Boys	1.58	0.10-2.52
Physical fighting at least 3x/previous year	No	1.00	
	Yes	2.42*	1.15-5.07
Weight reduction behaviour	No	1.00	
	Yes	1.23	0.71-2.10
Self-rated health	Good/very good	1.00	
	Fair/poor	1.40	0.81-2.41
Perceived family affluence	Above average	1.00	
	Average	0.99	0.63-1.55
	Below average	0.76	0.39-1.49
Friends' use of tobacco	None/few	1.00	
	Most/all	4.60***	2.73-7.73
Friends' use of alcohol	None/few	1.00	
	Most/all	2.81**	1.36-5.80
Friends' use of cannabis	None/few	1.00	
	Most/all	3.16***	1.95-5.10
Spending time with friends after 8 PM every day	No	1.00	
	Yes	3.01*	1.16-7.85
Type of school programme	Grammar	1.00	
	Technical	1.51	0.94-2.42
	Vocational	1.36	0.75-2.45
Perceived school performance	Good/very good	1.00	
	Average/below average	1.69*	1.07-2.68
Liking school a lot	Yes	1.00	
	No	1.31	0.84-2.04
Low perceived teachers' support[a]		1.25	0.94-1.67
Family type	Both parents	1.00	
	Single parent	1.05	0.58-1.90
	Reconstructed/others	0.85	0.43-1.71

		OR	*95% CI*
Family meals	3-4/week or more	1.00	
	1-2/week or less	1.82**	1.19-2.78
Feelings of depression	No	1.00	
	Yes	1.55	0.97-2.48
Breakfast consumption every weekday	Yes	1.00	
	No	1.84**	1.18-2.87
Energy drinks consumption every day	No	1.00	
	Yes	2.16***	1.41-3.31
Sexual intercourse	No	1.00	
	Yes	4.35***	2.76-6.86

n= 1094; p= 0.070; percentage of the variation explained = 52.3 %
*[a] continuous variable *p<0.05; **p<0.01; ***p<0.001*

Discussion

14.7% of 15-year-old students from Slovenia reported HPU, which is more than in some other studies (Hibell, et al., 2012). As elsewhere, the strongest associations were found between HPU and exposure to high number of substance using peers (Connell, et al., 2010; Harakeh, et al., 2012; Brooks-Russell et al., 2015; Tomczyk, et al., 2015). HPU was most strongly associated with tobacco using peers; therefore, tobacco control and prevention seem to be an opportunity to decrease PU.

To understand peer influence, also other factors need to be explored, such as spending time with peers (Connell, et al., 2010; Harakeh, et al., 2012), which is associated with HPU in our study and may reflect higher exposure to substance using peers and low parental monitoring (Harakeh, et al., 2012). Literature shows that strong parental monitoring and good family relationships are protective of PU (Connell, et al., 2010; Brooks-Russell, et al., 2015; Chan, et al., 2017). The building blocks of healthy family relationships are many and family meals may represent one of these by providing space and time spent together (Skeer, et al., 2013). Our study shows regular family meals to be protective against HPU.

Supporting previous findings of positive associations between PU and other risk behaviours (Connell, et al., 2009; Harakeh, et al., 2012; Tomczyk, et al., 2015), early sexual intercourse and fighting were associated with HPU. Literature examining multiple risk behaviours in adolescence proves that risk behaviours usually cluster and co-occur with unhealthy lifestyle (de la Haye, et al., 2014); in our study HPU is associated with irregular breakfast and daily consumption of energy drinks.

Among school factors, lower perceived school performance was associated with HPU, the finding that goes in line with some other studies (Connell, et al., 2010; Chan, et al., 2017). Other school factors were not significant, although they showed importance elsewhere (Connell, et al., 2010; Harakeh, et al., 2012; Tomczyk, et al., 2015; Chan, et al., 2017). Nevertheless, school can provide sup-

portive environment for adolescents; therefore, it is important to strengthen its protective effects.

Our study is important in highlighting the high prevalence of HPU among adolescents and first to provide factors associated with HPU in Slovenia on a nationally representative sample. It has certain limitations. Cross-sectional design does not allow for any conclusion on causality or chronology. Data are based on self-report and school dropouts are not included.

Conclusions

Results of the study need to be taken into account in the development of preventive interventions, which should focus on PU, rather than single substances. The study findings also provide arguments against some political and civil society initiatives to change legislation toward higher availability of alcohol and cannabis and are supportive of new tobacco control legislation.

References

BROOKS-RUSSELL, A., CONWAY, K.P., LIU, D., XIE, Y., VULLO, G.C., LI, K., et.al, 2015.

Dynamic Patterns of Adolescent Substance Use: Results from a Nationally Representative Sample of High School Students. *Journal of Studies on Alcohol and Drugs*, vol. 76, no. 6, pp. 962-970.

CHAN, G.C., KELLY, A.B., CARROLL, A. and WILLIAMS, J.W., 2017. Peer drug use and adolescent polysubstance use: Do parenting and school factors moderate this association? *Addictive Behaviours*. [viewed 10 June 2019]. Available from: doi:10.1016/j.addbeh.2016.08.004.

CONNELL, C.M., GILREATH, T.D., AKLIN, W.M. and BREX, R.A., 2010. Social-ecological influences on patterns of substance use among non-metropolitan high school students. *American Journal of Community Psychology*, vol. 45, no. 1-2, pp. 36-48.

CONNELL, C.M., GILREATH, T.D. and HANSEN, N.B., 2009. A multiprocess latent class analysis of the co-occurrence of substance use and sexual risk behavior among adolescents. *Journal of Studies on Alcohol and Drugs*, vol. 70, no. 6, pp. 943-951.

DE LA HAYE, K., D'AMICO, E.J., MILES, J.N., EWING, B. and TUCKER, J.S, 2014. Covariance among multiple health risk behaviors in adolescents. PLoS One. [viewed 10 June 2019]. Available from: doi:10.1371/journal.pone.0098141. eCollection 2014.

EMCDDA, 2009. Polydrug use: patterns and responses. Luxembourg: Publications Office of the European Union.

HARAKEH Z, DE LOOZE ME, SCHRIJVERS CT, VAN DORSSELAER SA and VOLLEBERGH WA, 2012. Individual and environmental predic-

tors of health risk behaviours among Dutch adolescents: the HBSC study. *Public Health*, no. 126, vol. 7, pp. 566-573.

HIBELL, B., GUTTORMSSON, U., AHLSTRÖM, S., BALAKIREVA, O., BJARNASON, T., KOKKEVI, A., et al, 2012. The 2011 ESPAD Report: Substance Use Among Students in 36 Countries. Stockholm: CAN.

SKEER, M.R. and BALLARD, E.L, 2013. Are family meals as good for youth as we think they are? A review of the literature on family meals as they pertain to adolescent risk prevention. *Journal of Youth and Adolescence*, no. 42, vol. 7, pp. 943-63.

TOMCZYK, S., HANEWINKEL, R. and ISENSEE, B, 2015. Multiple substance use patterns in adolescents - A multilevel latent class analysis. *Drug and Alcohol Dependence*, vol. 155, pp. 208-214.

The inclusion of video content in educational activities informing children and parents about the marketing of food products

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Abstract

An important aspect of nutrition literacy of children and parents are their abilities to critically assess nutritional values and quality as well as to make good decisions when buying food products. Children and their parents are increasingly exposed to different advertising techniques used by producers, who are trying to convince them into buying certain items. It is important for parents as well as their children to possess the tools needed for critical assessment of those techniques. Such tools can be taught using different educational techniques, with information and communication technology having an important role. The production of two 70-second-long videos promoting a more conscious acquisition of items, was aimed to inform children and their parents about the influence of advertising on their purchasing decisions and the importance of careful examination of nutritional profiles in the process of shopping. Both videos were made with classic filming techniques that present different situations all consumers face during shopping, and partly with animation techniques. Both video and cartoon animation are intertwined with the story narration and the key messages unfolding in image and sound form. The videos include teaching means suitable for formal and recreational dietary education of children and their parents. The content and didactics are suited to their needs and encourage them to buy and consume healthier foods.

Key words: video, children, parents, purchasing food products, education

Introduction

Pendergast, Garvis and Kansa (2013) point out that children have poor eating habits, which places them in the group exposed to a high risk of developing excessive body weight or obesity as well as chronic noncommunicable diseases. Starc, Strel and Kovač (2014) write that children and young people in Slovenia

fail to follow a healthy diet, as they often prefer unhealthy foodstuff and all too often consume foodstuff belonging to the group of energy-dense and low-nutrient foodstuffs. Considering the fact that eating habits are formed already at the young age, parents have significant influence on their children›s eating habits (Fordyce – Voorham, 2011; Dick and Ferguson, 2015). Another important factor, food advertising is also influencing children's eating habits and food choices (Story, Neumark-Sztainer and French, 2002). Digital media have been rising in popularity and connecting individuals and institutions (Greenhow, 2011). According to Singer and Singer (2012) 93% of children are regularly interacting with digital media. Such behaviour has a great impact on the child's developing brain. This fact is often exploited by companies. Promoting to such young, impressionable audience through social media brings in new potentially long-lasting customers (Sargent, Gibson and Heatherton, 2009). Children are also not adapted to critically assess advertising messages like adults are (Buijzen and Valkenburg, 2000). New age parents are also increasingly more interested in their child's wishes and preferences, so the companies that advertise to their younger audience indirectly impact the older generation as well (Valkenburg, 2000). Therefore, it is important to provide quality nutrition education in order to develop adequate nutrition literacy of children and parents (Ronto, Ball, Pendergast and Harris, 2016). Nutrition literacy is defined as the integration of knowledge, skills and behaviours necessary to plan, supply, select, prepare and consume food (Vidgen and Gallegos, 2014). To achieve the goals of nutrition education, various work methods have to be used in the education process. Videos are a valuable tool to support learning and can be adapted for different groups of learners. They facilitate behaviour change, which is the goal of nutrition education (Whitaker, Sherman, Chamberlin and Powers, 2004).

This paper presents the contents, development and applicability of videos, intended to inform children and parents about the influence of marketing on their purchasing decisions and the importance of careful examination of food item nutritional profiles in the process of shopping. Two different videos were developed within the program (Student Innovation Projects for Social benefit - ŠIPK), financed by Republic of Slovenia and European Union Social Fund. In this paper, we will further describe one of these videos.

Description of video

Videos are a didactic tool that supports learning, and they can be used during formal and informal education on nutrition. Therefore our video, as a tool for enhancing more conscious acquisition of items and purchasing decisions of children and parents, was developed within the project.

Educational goals of the video

The educational goals of the video, which was intended for children and parents, were formed on the basis of the project. The main goal of the project was

evaluation of the nutritional profile of foods intended for the nutrition of children and the promotion of healthy food choices to children and parents.

We estimate that the video facilitates achievement of the following goals:

- it teaches consumers, primarily children and their parents, about the way the sales corporations promote their products;
- it supplies the consumer with important facts about nutrition;
- it helps the consumer to assess nutritional values of food products more critically;
- it provides the parent some techniques with which they can promote healthy eating habits to their child;
- it teaches children how to identify appropriate and inappropriate food products in a store, based on the packaging.

The results of evaluating nutritional profiles of foods intended for the nutrition of children, on the basis of which the video was made

Within the project, the current state of the market was examined. Specific food items that are being promoted to children in different shopping stores in Slovenia were identified and analysed. These items were examined in 9 stores (E. Leclerc, Müller, DM, Spar, Hofer, Lidl, Mercator, Tuš, and Eurospin). It was found that a lot of food items that were marketed for children had colourful packaging, and included animal pictures and cartoon characters. The second thing which was identified was the positioning of these items. They were almost always placed on the lower section of the stalls, where they could be easily accessed by children. On the front panel of the packaging, such item was usually plastered with healthy labels like gluten free, no GMO or fat free that gave the appeal of a healthy product. When it was examined further, most of the items contained excess amount of sugar or other artificial sweeteners, fats and salt.

Based on these findings, a script was constructed using a storytelling format that was later adapted into a video.

Scenery of the video intended for children and parents based on identified marketing strategies

In the introductory part, the video follows the story of a mother and her child (Figure 1). During this phase, a few key phrases pop up to explain the positioning and design of the food items marketed to children. After that, another issue is brought up with the misleading front cover of a package. In the middle part of the video, these issues are further analysed and solutions to the problems are brought forward. They are displayed in animation format using vector graphics to attract the attention of the children (Figure 2). Alongside the animations, a few key phrases are shown again that further notify the audience. The ending of the video presents a disentanglement of the first part of the story.

Figure 1: Mother and child in a shop with the food items for children on the lower section of the stall.

In this scene (Figure 1), viewers are observing the placement of food items marketed to children. It is important to keep in mind the height difference between the mother and the child. The items on the lower shelves are in the eye view of the child and therefore quickly noticed.

Figure 2: Animated figures that show what children find attractive on a packaging of food items.

The companies that are manufacturing children's food items are trying to make their product more appealing by making the packaging more colour-

ful, plastering it with animal drawings or adding characters from children's TV shows. That is what the scene (Figure 2) is trying to communicate to the watchers. It's also important for parents to be aware of the nutritional values and ingredients that are in present food products, especially fats, sugars and salts. They can help themselves better understand these values using the online page Veš Kaj Ješ (Figure 3), that has a stoplight system of showing the quality of a product. If the values are marked red, the item is not suitable for regular consumption.

Figure 3: An overview of important nutrients and their values that are still appropriate in a food item.

The technical concept of the video

The project was designed to apply 2 filming techniques (animation and film) intertwining with each other, using 3 different software programs to achieve it. Adobe Indesign was used for the artwork, since it has the tools to make vector graphics. The finished animations of the vector drawings were done with Adobe After Effects. Using a Nikon D3200 camera, the introductory and conclusion parts of the video were filmed. The last phase consisted of organising the files into a single video and finishing it off with background music, sound effects and complementary text. To help with that the third program, Filmora, was used.

Conclusions

The goal of nutrition education is to achieve adequate nutrition literacy. An important component of nutrition literacy is the ability to critically asses nutritional values, quality and make good decisions when buying food products. For

assessing adequate nutrition literacy, different didactic tools can be used during formal and informal nutrition education. One of them are videos, which support learning and can be adapted for all learners. The goal of our video was to inform children and parents about the influence of marketing on their purchasing decisions and the importance of careful examination of food items' nutritional profiles in the process of shopping. In future, it will be necessary to evaluate the video, made during the project and also to include the video in formal and informal nutrition education.

References

BUIJZEN, M. and VALKENBURG, P.M., 2000. The impact of television advertising on children's Christmas wishes. *Journal of Broadcasting & Electronic Media*, vol. 44, no. 3, pp. 456–470.

DICK, B. and FERGUSON, B. J., 2015. Health for the World's Adolescents: A Second Chance in the Second Decade. *Journal of Adolescent Health*, vol. 56, no. 1, pp. 3–6.

FORDYCE - VOORHAM, S., 2011. Identification of Essential Food Skills for Skill-based Healthful Eating Programs in Secondary Schools. *Journal of Nutrition Education and Behaviour,* vol. 43, no. 2, pp. 116–122.

GREENHOW, C., 2011. Youth, Learning, and Social Media. *Journal of Educational Computing Research*, vol. 45, no. 2, pp. 139–146.

PEDERGAST, D., GARVIS, S. and KANASA, H., 2013. The value of home economics to address the obesity challenge: An evaluation of comments in an online forum. *International Journal of Home Economics,* vol. 6, no. 2, pp. 272–285.

RONTO, R., BALL, L., PENDERGAST, D. and HARRIS, N., 2016. ″Environmental factors of food literacy in Australian high schools: views of home economics teachers″, *International Journal of Consumer Studies,* vol. 41, no. 1, pp. 1–9.

SARGENT, J.D., GIBSON J. and HEATHERTON, T.F., 2009. Comparing the effects of entertainment media and tobacco marketing on youth smoking. *Tobacco Control*, vol. 18, no. 1, pp. 47–53.

SINGER, D.G. and SINGER, J.L., 2012. *Handbook of children and the media*. 2nd ed. London: Sage, pp. 75–76.

STARC, G., STREL, J. and KOVAČ, M., 2014. *SLOFit 2014 – analiza telesnega in gibalnega razvoja otrok in mladine slovenskih osnovnih in srednjih šol v šolskem letu 2013/2014*. Ljubljana, Univerza v Ljubljani, Fakulteta za šport.

STORY, M., NEUMARK-SZTAINER, D. and FRENCH, S., 2002. Individual and environmental influences on adolescent eating behaviours. *Journal of the American Dietetic association*, vol. 102, no. 3, pp. 40–51.

VALKENBURG, P.M., 2000. Media and youth consumerism. *Journal of Adolescent Health*, vol. 27, no. 2, pp. 52 – 56.

VIDGEN, H.A. and GALLEGOS, D., 2014. Defining food literacy and its components, *Appetite,* vol. 76, pp. 50–59.

WHITAKER, R.C., SHERMAN, S.N., CHAMBERLIN, L.A. and POWERS, S.W., 2004. Altering the perceptions of WIC health professionals about childhood obesity using video with facilitated group discussion. *Journal of the American Dietetic association*, vol. 104, pp. 379–386.

Evaluation of the nutrient profiles of foods targeting children

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Abstract

Problem presentation: With their products and product presentation, food industry has a significant impact on people's eating habits. Children are a particularly vulnerable group, as they are often encouraged by food industry to buy and eat food with an unhealthy nutritional profile. *Purpose:* In our study we have analysed the nutritional profile of randomly selected foods targeting children with packaging, from nine nutritional categories. The nutritional profile of each individual foodstuff was assessed using Nutritional Guidelines to form codes of conduct in protecting children against inappropriate advertising and traffic light labelling. *Findings:* Results showed that less than a fifth of the examined food products are suitable for children's diet according to the guidelines. Only foods from four categories, which includes nine meat products, four products from a group of cheeses, two beverages and one dairy spread could be promoted. Our research therefor concludes that mainly foods with high content of sugar, fat or salt (red light on a traffic light), are targeted to children and are therefore not suitable for daily consumption. We believe that described problem could be resolved by socially more responsible behaviour of the industry and by improvement of nutritional literacy of children and their parents.

Key words: children, nutritional profile, children's diet, food industry

Introduction

With their products and advertising, food industry has a significant impact on people's eating habits. Children as a particularly vulnerable group are often addressed by advertisers to buy and eat foods with an unhealthy nutrient profile (Šinkovec and Gabrijelčič Blenkuš, 2010; World Health Organization, 2013). Our study included analysing nutrient profile of 90 randomly selected foods,

belonging to nine nutritional categories, intended to attract children with their packaging.

Healthy diet is necessary to provide children enough energy and nutrients for their health, growth and development. It is also important for children to acquire healthy eating habits in their early years as these are often retained in later periods and necessary for long-term health (Gabrijelčič Blenkuš et al., 2005). In addition to parents, the environment has significant influence over children's eating habits. The environment encourages frequent consumption of energy-dense foods, however, it does not promote sufficient physical activity, which is one of the main causes of the increasing trend of obesity in children (Šinkovec and Gabrijelčič Blenkuš, 2010; World Health Organisation, 2013).

On the shelves of stores, we find many products from various product groups that address children with advertisements, presentations on the package or product design, for example by inscription "Junior", pictures of cartoon characters or cookies in the shape of dinosaurs. All this often convinces parents that the product is suitable and intended for children's diet, and they buy it (Šinkovec and Gabrijelčič Blenkuš, 2010).

Children are also influenced by such products and persuade their parents to purchase them. Pictures of cartoon characters on products are especially popular with younger children, who are more likely to notice picture-based than text messages. Even before they learn to read, they are able to identify many brands. As some studies show, just the knowledge of dietary brands has a significant impact on predicting their body mass index (ITM) in the future (The European Consumer Organisation, 2017).

In connection with Student Innovation Projects for Social Benefit (ŠIPK - študentski inovativni projekti za družbeno korist), students of the Biotechnih cal Faculty and the Faculty of Education of the University of Ljubljana analysed nutrient profiles of 90 randomly selected foods, belonging to nine nutritional categories, which addressed children with their packaging. Foodstuff were bought from the following stores: DM, E.Leclerc, Eurospin, Hofer, Lidl, Mercator, Mueller, Spar and Tuš. Products addressing children by means of for example nametag "Junior", pictures of cartoon characters or the shape of a food (dinosaurs, bears etc.) were selected.

Methods

In our study, we have analysed the nutritional profile of randomly selected foods targeting children with packaging, from nine nutritional categories. The nutritional profile of each individual foodstuff was assessed using Nutritional Guidelines to form codes of conduct in protecting children against inappropriate advertising (hereinafter to be referred as: Nutritional Guidelines), prepared by the Ministry of Health (Ministrstvo za zdravje). Nutritional Guidelines give guidance on the marketing of foods in advertisements within and with programme content intended for children. Guidelines criteria for certain nutri-

ents in foods (particularly fats, sugar and salt) determine whether promoting a particular food is in any way appropriate or not (Ministrstvo za zdravje, 2016b). The nutrient profile of the foods was also evaluated by food traffic light labelling (Zveza potrošnikov Slovenije, 2018).

If particular food is not suitable for promotion in advertisements due to an inadequate nutrient profile, we believe that it also should not be addressing children through advertisements, presentations on the package or product design. This is also in line with one of the priority areas of the Resolution on the National Program on Diet and Physical Activity for Health 2015-2025, Dober tek Slovenija, which is based on consumer awareness raising through the proper labelling, presentation and marketing of foods, and restricts the marketing of food for children (Ministrstvo za zdravje, 2016a).

Results

Randomly selected foods were sorted into nine nutritional categories, which are determined by Nutritional Guidelines and represented in the Figure 1 (Ministrstvo za zdravje, 2016b).

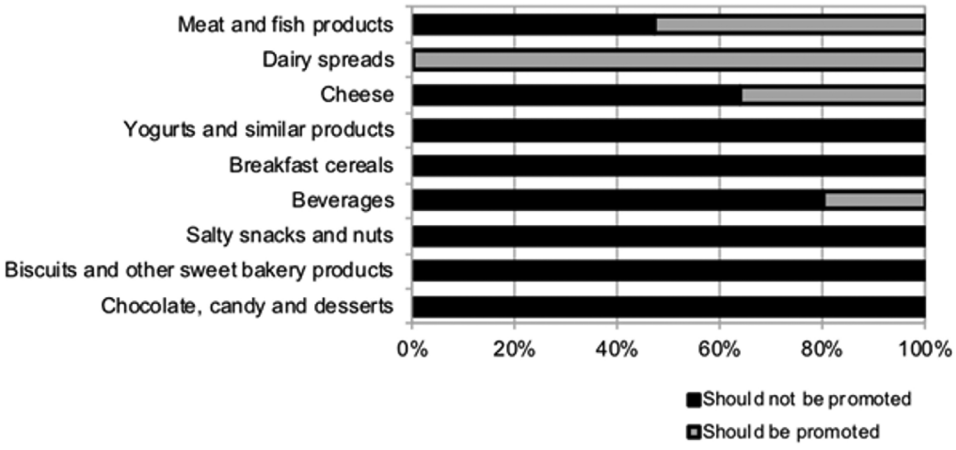

Figure 1: The adequacy of products according to the Nutritional Guidelines

Results, represented in the Figure 1, show that less than a fifth of the examined food products are suitable for children's diet according to the guidelines. Only foods from four categories, which include nine meat products, four products from the group of cheeses, two beverages and one dairy spread, could be promoted.

Most foods which should not be encouraged are expectedly from the categories of Chocolate, candy and desserts, Biscuits and other sweet bakery products and Salty snacks and nuts. These are energy-dense, but also nutritionally poor foods, which we can undoubtedly consider an unhealthy choice. It was surprising, however, that the nutrient profile of all foods examined from the

categories Breakfast cereals and Yogurts and similar products was inadequate, and therefore their consumption should not be encouraged. Breakfast cereals are very popular among Slovenians and we often enjoy them, as well as yogurt. Unfortunately, due to the high sugar content, they are most often not suitable for daily consumption. The consumption of food from other categories should not be encouraged either due to the excessive content of sugar (Beverages), inadequate fat composition (Cheese and Meat and fish products) or excessive salt (Salty snacks and nuts and Meat and fish products).

A similar result was obtained when the selected foods were evaluated with food traffic light labelling, the one that tells with colour whether the amount of a certain nutrient in a food is appropriate (green), medium (yellow) or excessive (red). For foods with red coloured fields, a warning is given that it should not be consumed in large quantities and not too often. In the case of foods that we had examined, the red light shined in most products, more precisely in 72 out of a total of 90 products. Therefore, most are not suitable for everyday food and can be consumed only occasionally or in small quantities. In our case, a quarter of foods, the red light was turned on due to an excessive amount of fat, and in 37 % due to excessive saturated fat content. The red light illuminated a quarter of the foods that contained too much salt, while too much sugar was contained in over half of all foods examined (43 %) in the food traffic light system.

Discussion

Meat and meat products are a source of protein needed for children's growth and development. According to the Nutritional Guidelines, the consumption of meat products can be encouraged if they contain less than 20 grams of fat and less than 1.7 grams of salt per 100 grams of food. The results of the analyses of 17 randomly selected meat products that attracted children with their packaging have unfortunately shown that the consumption of eight products should not be encouraged. They contain a lot of fat and salt, which makes them unsuitable for children's consumption and should only be on the menu occasionally. Seven of the total of 17 products examined contained too much fat, ranging from 21.5 to 28.1 grams per 100 grams of food, for which a red light would blink at the food traffic lights. The light would also turn red, because this foods contained to much salt (1.8 – 2.2 g / 100 g).

In Figure 2, we compared two meat products more in detail. One was the product the consumption of which can be encouraged (Dino piščančji medaljonček) and the other which should not (Perutnina Ptuj Pepe mini pašteta). We compared the amount of daily intake of energy and nutrients that children (4 years old) or teenagers (13 - 15 years old) get with one serving (50 g), compared to the recommended amount of daily intake of energy and nutrients. Dino piščančji medaljoni product has a more appropriate nutrient profile, since both children and teenagers consume less energy, fat and salt with one portion than with Perutnina Ptuj Pepe mini pašteta (Ministrstvo za zdravje, 2004).

Table 1: The percentage of daily energy and nutrient intake for a child (4 years) or a teenager (13 - 15 years) with a portion of food from the nutritional category Meat and fish products

Product	**Age**	*Portion*	*Energy*	*Fat*	*Salt*
	Years	*g*	*%*	*%*	*%*
Perutnina Ptuj Pepe mini pašteta	4	50	10	27	101
	13 - 15		6	16	75
Dino Piščančji medaljončki	4	50	7	8	62
	13 - 15		4	5	47

Cereals are food that many children eat for breakfast every day. They are part of healthy diet and a great source of dietary fibre for children. Nutritional Guidelines determine that cereals with appropriate nutrient profile contain less than 10 grams of fat, less than 15 grams of sugar and less than 1.2 grams of salt per 100 grams of food. At the same time they need to contain at least 6 grams of dietary fibre per 100 grams of food.

The results of the analysis showed that none of the randomly chosen breakfast cereals were suitable for everyday consumption, mainly because of the high sugar content. As many as 11 of the total of 12 examined products contained too much sugar, ranging from 19 - 33 g per 100 g, for which a red light would appear at the food traffic lights. Also, one product contained too much salt (2.18 g per 100 g) and five products contained too little dietary fibre. The selected breakfast cereals are therefore not suitable for daily consumption and should only be included on children's menu occasionally.

In Figure 3, we compared more in detail two breakfast cereal products, consumption of which should not be encouraged. One product had the best and the other the least adequate nutrient profile. We compared the amount of daily intake of energy and nutrients that children (4 years old) or teenagers (13 - 15 years old) get with one serving (30 g), compared to the recommended amount of daily intake of energy and nutrients. A child with a portion of Kellog's Tresor cereals consumes as much as 24 % of the safe daily amount of sugar, and teenager 14 %. Given the sugar content, the Zlato polje Corn flakes have a more appropriate nutrient profile. With one serving of this cereal, child consumes 7 % of the recommended daily intake of simple sugars and the teenager only 4%. We also need to pay attention to the salt intake, since it is present in high values in many products. With one portion of Zlato polje Corn flakes a child consumes 63 %, and the teenager 47 % of the recommended daily intake of salt. As mentioned earlier, breakfast cereals are also important source of dietary fibre, which have a beneficial effect on health. However, the two selected cereals have dietary fibre content below the value determined by the Nutritional Guidelines. A child or teenager consumes only 4 to 12 % of the recommended daily amount of dietary fibre in one portion of cereals (Ministrstvo za zdravje, 2004).

Table 2: The percentage of daily energy and nutrient intake for a child (4 years) or a teenager (13 - 15 years) with a portion of food from the nutritional category Breakfast cereals

Product	*Age*	*Portion*	*Energy*	*Sugar*	*Salt*	*Dietary fiber*
	Years	*g*	*%*	*%*	*%*	*%*
Kellogg's Tresor	4	30	9	24	33	12
	13 - 15		6	14	24	7
Zlato polje Corn flakes	4	30	8	7	63	6
	13 - 15		5	4	47	4

Conclusions

Images of brand mascots, dragons, bears or licensed cartoon characters on products, and the contents of the product in the form of bears and other popular characters recall children´s positive emotions that they connect with game and entertainment, even if they are not yet able to read and communicate (The European Consumer Organisation, 2017). During the review, we noticed that the presentation which addresses children is most often on foods that are rich in sugar, salt and fat, and can cause obesity in children. Rarely are such presentations found on fresh fruit and vegetables, and ordinary dairy products and unsweetened cereals.

Together with the Alliance of consumers of Slovenia (Zveza potrošnikov Slovenije), the Faculty of Education of the University of Ljubljana, and in accordance with the guidelines, we are calling on producers to stop using presentations that address children, on their packaging for products that are rich in fat, sugar and salt.

References

GABRIJELČIČ BLENKUŠ, M., POGRAJC, L., GREGORIČ, M., ADAMIČ, M., ČAMPA, A., 2005. *Smernice zdravega prehranjevanja v vzgojno-izobraževalnih ustanovah (od prvega leta starosti naprej)* [online]. Ljubljana: Ministrstvo za zdravje, 80. [viewed 15 March 2019]. Available from: http://www.mz.gov.si/fileadmin/mz.gov.si/pageuploads/javno_zdravje_09/Smernice_zdravega_prehranjevanja.pdf

MINISTRSTVO ZA ZDRAVJE, 2004. *Referenčne vrednosti za vnos hranil* [online]. Ljubljana: Ministrstvo za zdravje, 215. [viewed 20 March 2019]. Available from: http://www.mz.gov.si/fileadmin/mz.gov.si/pageuploads/javno_zdravje_2014/_Referencne_vrednosti_za_vnos_hranil-pdf_.pdf

MINISTRSTVO ZA ZDRAVJE, 2016a. Dober tek Slovenija: Nacionalni program o prehrani in telesni dejavnosti za zdravje 2015-2025 [online]. Ljubljana: Ministrstvo za zdravje, 40. [viewed 20 March 2019]. Available from: https://www.dobertekslovenija.si/wp-content/uploads/2018/12/SLO_brosura_web_2016.pdf

MINISTRSTVO ZA ZDRAVJE, 2016b. Prehranske smernice za oblikovanje pravil ravnanja za zaščito otrok pred neprimernimi komercialnimi sporočili [online]. Ljubljana: Ministrstvo za zdravje, 12. [viewed 1 March 2019]. Available from: http://www.mz.gov.si/fileadmin/mz.gov.si/pageuploads/javno_zdravje_2015/prehrana/prehran ske_smernice-oglasevanje_072016.pdf

ŠINKOVEC, N., GABRIJELČIČ BLENKUŠ, M., 2010. Omejevanje trženja nezdrave hrane otrokom - pregled stanja [online]. Inštitut za varovanje zdravja Republike Slovenije, 58. [viewed 15 March 2019]. Available from: https://www.nijz.si/sites/www.nijz.si/files/uploaded/omejevanjetrzenjanezdravehraneotrokom_22.pdf

THE EUROPEAN CONSUMER ORGANISATION (BEUC), 2017. Cartoon characters and food: Just for fun? - Position paper on the use of brand mascots and licensed media characters in marketing to children [online]. [viewed 20 March 2019]. Available from: https://www.beuc.eu/publications/beuc-x-2017-065_eca_position_paper_on_the_use_of_brand_mascots_and_licensed_media_characters_in_marketing_to_children.pdf

WORLD HEALTH ORGANISATION, 2013. Marketing of foods high in fat, salt and sugar to children: Update 2012-2013 [online]. [viewed 20 March 2019]. Available from: http://www.euro.who.int/__data/assets/pdf_file/0019/191125/e96859.pdf

ZVEZA POTROŠNIKOV SLOVENIJE, 2018. VešKajJeš: preverite prehranski profil živil [online]. [viewed 1 March 2019]. Available from: https://www.zps.si/index.php/hrana-in-pijaa-topmenu-327/oznaevanje-ivil-topmenu-328/9307-veskajjes-preverite-prehranski-profil-zivil

Smart home appliances and mobile app for the health of adolescents

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Abstract

Introduction: Modern ICT solutions change processes and relationships in society. Children and adolescents are particularly exposed here. For this reason, we need to address the use of ICT critically and responsibly, exploiting its positive effects on adolescents in the fields of health, education or interpersonal relationships. *Methods:* The study looked at the use of smart home appliances and mobile application. The survey assessed the impact of ICT on life-style, attitude towards healthy nutrition etc. We assumed that the impact could be direct, as adolescents are already meeting ICT very early, and through older members of the household.
Results: The results of the survey conducted with a questionnaire in the beginning of 2019 in Slovenia and the Netherlands enable understanding of the impacts of ICT: awareness of these solutions' potential; improving the attitude towards a healthy lifestyle; readiness to change behaviour. The results were evaluated considering the sample size (n=11), which was limited due to the high cost of the appliances. *Discussion and conclusions:* Modern ICT has a positive impact on the promotion of a healthy lifestyle. Well-known solutions in the field of entertainment and social media attract younger users easily. For this reason, it is also necessary to make products such as household appliances with a corresponding application attractive for adolescents. The important qualities of these solutions are interesting use, and simple and safe operation.
Keywords: digitalization of society, adolescents, healthy lifestyle, smart home appliances, mobile application

Introduction

In the last two decades some information and communications technologies (ICT) such as internet, mobile telephony, smart phones, digital and social media etc. were well adopted by our society. In the recent period, some new ICTs

are entering our lives even faster. Examples are internet of things (IoT), smart homes, 5G mobile communication, artificial intelligence (AI), virtual reality (VR), augmented reality (AR), self-driving vehicles, block chain technology, cryptocurrency, and others. They all change processes and relationships in the society, involving organizations and individuals alike. Because of all these changes, we can detect occurrences of dysfunctional behaviour such as addiction, poor communication, aggression etc. (Fuentes, 2018). Experts from different fields like education, psychology, addiction treatment, IT development and others support the use of modern technology, if used in a responsible manner, while at the same time pointing to several negative consequences that this technology can cause (Bijeljac, 2019). Children and adolescents are particularly exposed here. For this reason, we need to address the use of ICT critically and responsibly, exploiting its positive effects on adolescents in the fields of health, education or interpersonal relationships.

Methods

Figure 1: Connected home appliances and mobile application

The study looked at the use of smart (connected) home appliances (i.e. refrigerator, oven induction hob, and hood) and mobile application from the ConnectLife set of solutions (Gorenje, 2019). Connected home appliances utilize IoT technologies. Every connected appliance can with its sensors detect conditions in its surroundings. Next important feature is the appliance's ability to

identify how the user uses it. Connected home appliances also "understand" the instructions sent from the user via mobile application running on his/her smart device like phone or tablet. Mobile application enables remote interaction with the appliances and presentation of various digital content such as illustrated instructions for use, images, recipes, tips and tricks, frequently asked questions and answers, guidelines for healthy food preparation and nutrition, suggestions for efficient energy and water consumption etc. (Figure 1).

The research team conducted a survey with a questionnaire in Slovenia and the Netherlands in February and March 2019. The survey assessed the impact of the aforementioned solutions on life-style changes, attitudes towards healthy nutrition and responsible management of natural resources. We assumed that the impact could be direct, as children and adolescents are already meeting ICT very early, and through older members of the households.

A questionnaire was prepared based on Mobil Application Rating Scale methodology (MARS) (Stoyanov, 2015) and adopted for smart home appliances and mobile application case (Gorenje, 2017). The methodology used assesses application quality on six dimensions (Table 1).

Table 1: Six aspects of assessing the quality of mobile application for smart home appliances

Dimension	*Description*	*No of Questions*
A) Engagement	How fun, interesting, customisable, interactive (e.g. sends alerts, messages, reminders, feedback, enables sharing), well-targeted to audience the solutions are?	5
B) Functionality	How the solutions are functioning? Are they easy to learn, navigate?	4
C) Aesthetics	Are the solutions well designed, visually appealing, do they use harmonious colour scheme, etc?	3
D) Information	Do the solutions contain quality information (e.g. text, feedback, measures, references) from a reliable source?	7
E) Subjective quality	This section was constructed to capture users' subjective feedback in relation to the developed solutions - smart home appliances and mobile application.	4
F) Application specific	Criteria adjusted and used to assess the perceived impact of the app on the user's knowledge, attitudes, intentions to change as well as the likelihood of actual change in the target health behaviour.	6

Questions from sections A trough E were rated using different 5-point scales. Together with possible choices, additional explanations were given to make user's decisions easier. In section "F) Application specific", statements were offered to the user who had the possibility to choose from "1 – strongly disagree" to "5 – strongly agree".

In addition to this questionnaire, test users reported issues and elaborated their recommendations to the internal help-desk department. These insights will influence future improvements of the ConnectLife solutions.

Results

The results enable understanding of the ICT impacts such as: awareness of these solutions' potential; user's readiness to improve the attitude towards a healthy lifestyle; and readiness to change behaviour. The results were evaluated considering the sample size (n=11), which was limited due to the very high cost of the test appliances and the fact that only limited number of users who were involved in the survey can be qualified in adolescent target group. Figure 2 shows the summary results from the survey.

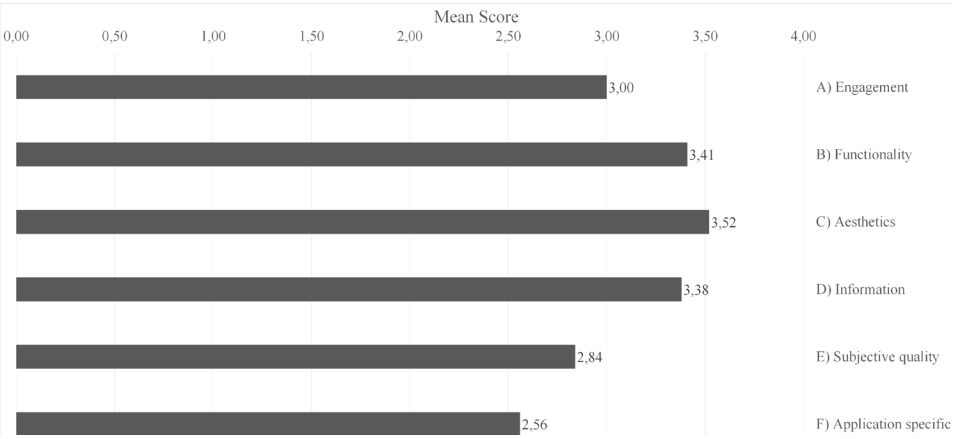

Figure 2: Questionaries' Mean Scores per Dimension

Section A) Engagement

Test users marked application as quite fun, entertaining and interesting to use. Average score of this section was 3.00. Six out of 11 test users rated application engagement above average.

Section B) Functionality

Test users evaluated that the application is easy to learn, that menus and icons are clear and very easy to manage and that the overall functionality is good with some minor problems. Average score of the section was 3.41. Six out of 11 test users rated application functionality above average.

Section C) Aesthetics

Test users evaluated that the application design is simple, clear and logically organized and visual appearance is pleasant. Average score of the section was 3.52. Six out of 11 test users rated application aesthetic above average.

Section D) Information

Test users evaluated that visual information through images and videos is mostly logical and that the application has achievable goals. Average score of the section was 3.34. Seven out of 11 test users rated application's information above average.

Section E) Subjective quality

Seven out of 11 test users would recommend ConnectLife application to others. Testers marked that they would use application quite a lot and would even consider paying for it. Average score was 2.84. From this perspective, only five out of 11 test users rated application's subjective quality above average.

Section F) Application specific

In this section, only 8 respondents provided valid feed-backs. Average score was 2.56 which is the lowest among observed dimensions. Four out of 8 test users with valid responses rated application's specific qualities above average.

Discussion

Considering the limited size of the test sample the results can be interpreted as indicative only. They offer us well informed insight into mechanisms how new technologies are adopted by target group of adolescents.

The results of the survey show that younger users have a good appraisal of functionality (3.41 on a scale from 1 to 5), aesthetics (3.52) and information provision (3.34) in tested solutions. A bit worse, they subjectively assessed the quality (2.84) of tested solutions and their motivation for lifestyle changes (2.56). From this we can conclude that topics such as a healthy lifestyle, changing habits, or responsible consumption of natural resources, are the topics that adolescents are just beginning to think about.

Based on the general observations that younger generations are more susceptible to new technologies, we anticipate that connected home appliances will be of interest to this generation.

Awareness of how modern ICT can support healthy lifestyle and make their lives easier and simpler will strengthen at the transition from adolescence period to independent living. For this reason, it is necessary to allow adolescents to become familiar with these solutions.

Conclusions

Modern ICT has a positive impact on the promotion of a healthy lifestyle. Well-known solutions in the field of entertainment and social media attract younger users easily. For this reason, it is also necessary to make products such as household appliances with a corresponding application attractive for adoles-

cents. The important qualities of these solutions are interesting use, simple and safe operation, aesthetics and informativeness.

Developers of these solutions must understand their social responsibility, since they should not only focus on economic benefits. Providers of products and services should responsibly encourage younger consumers not to use modern ICT solutions to waste their time unnecessarily, but to simplify everyday tasks and to improve their attitude towards a healthy lifestyle, readiness to change their behaviour, and, consequently, to influence positively on quality of their life.

References

BIJELJAC, M., ERKER, J., ISAKOVIČ, A., KRAMLI, M., PODJED, D., 2019. Electronic Communications in Modern Society – "Addiction" to Electronic Communications. In: *Round table organized by Council for Electronic Communication of Republic of Slovenia*, Ljubljana, May 20th, 2019. Available from: https://www.sek-rs.si/mnenja-priporocila-in-predlogi-sveta/okrogla-miza-elektronske-komunikacije-v-sodobni-dru%c5%bebi-odvisnost-od-elektronskih-komunikacij.

FUENTES, A., 2018. Are We Really as Awful as We Act Online? *National Geographic Magazine*, August 2018, pp. 17-18.

GORENJE, 2017. *ConnectLife – App: Quality Ratings.* In: Internal document Gorenje d.o.o. - Connected Appliances Project, May 2017.

GORENJE, 2019. *Connected Appliances Project - Field Test Final Report (oven, fridge, hood, hob).* In: Internal document Gorenje d.o.o. - Connected Appliances Project, February 2019.

STOYANOV, S., HIDES, L., KAVANAGH, D., ZELENKO, O., TJONDRONEGORO, D., AND MANI, M., 2015. Mobile App Rating Scale: A New Tool for Assessing the Quality of Health Mobile Apps. *JMIR Mhealth Uhealth*, vol. 3, no. 1, pp. e27.

The diverse abilities judokas' inclusion influence: pilot research

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Abstract

Introduction: An inclusion of children and adolescents with diverse abilities into ordinary sports environments derives from human rights. It is based on the principle of equal opportunities and through practice it educates participants to accept the diversity of the individual. Regular sports activity of children and young people with diverse abilities also influences their general psychophysical well-being and motor skills, which is, according to their parents and themselves, reflected in everyday activities and tasks. In the pilot study of diverse abilities judokas inclusion influence, we focus on their personal experience and their parent's opinion. *Methods:* The method of research is the analysis of social networks with the measurement of social support. The main source of the pilot survey data is the questionnaire and interviews. We also use archives, direct observation with participation, diaries and electronics resources. *Results:* The main theoretically significant result of the pilot study is a pervasive perception of positive influence of the regular practice on the diverse abilities judokas' condition and their feeling. All the averages were significantly different from the middle point of the scales on the level of $p < 0{,}001$. *Discussion and conclusion:* The measurement of social support among athletes in an inclusive environment has not yet been examined. Data analysis, research results and the insight into both the social networks of inclusive sports club members and the quality and strength of their interrelationships, will enable us to contribute to a greater visibility and efficiency of inclusion in sport, and encourage ordinary sports organizations to increase the inclusion of all people into their programs.

Keywords: inclusion, sports club, social networks, inclusion ethics, impact on daily activities

Introduction

Inclusion is a concept derived from human rights that first started in school system and later in labor. With about fifty years of modification, adaption and upgrades, from integration to nowadays "why-inclusion" we try to make it happen in afternoon free time activities such as sport, recreation, art etc. (Rešetar, 2017). The ability to choose is one of the basic conditions for inclusion. Inclusion means equal participation of all members of certain group in every possible way (Rutar et al., 2010). Full inclusion needs strong connection between individuals, families, local community, national systems and policy (Šuc, Bukovec and Karpljuk, 2017). When we talk about inclusion today, we usually consider main stream population excepting segregate groups of people in equal manner in ordinary life and daily situations. The involvement of athletes with diverse abilities in the society also helps to overcome prejudices and fears prior to this population. So "both sides" gain. The question why-inclusion (Rutar, 2017) comes from thinking that we are all human sharing the same planet, having similar basic needs. That is why leaders in the inclusive judo club focus their attention primarily on members of a club as such and treats them equally as athletes with their rights and duties (Brandon, 1990), respects all judokas in the same manner, and only later consider other circumstances and psycho-physical condition of the individual like talent, visually impairment, social conditions, strength, strength, possible injury, size, flexibility, etc.

Sport for athletes with diverse abilities began to develop after the 2nd world war in England after doctor Guttman searched solutions for rehabilitation process after injuries (Filipčič and Jerman, 2018). Nowadays sport and recreation offer many diverse opportunities to develop one's body, mind and social skills. Sports clubs therefore present suitable environment for inclusion. Martial art philosophy seems even closer to the essence of inclusion. Judo ethical principles that base on values of respect, honesty, trust, order, discipline, reciprocity, modesty, patience, serenity, focus, perseverance, good behavior, mutual respect and cooperation (Murata, 2005) represent useful tools for the cultivation of tolerance, acceptance and consideration of diversity. Sport offers an important opportunity for equal participation and social recognition (Mihorko, Štrumbelj, Čander, Cimerman Sitar, 2014).

Participation in everyday occupations is vital for all humans. As described by the World Health Organization, participation has a positive influence on health and well-being. But the presence of disability has been found to lead to participation that is less diverse and is located more in the home, involves fewer social relationships and therefore only few strong ties with one to three people and almost non week ties (Brown, 2011). It also includes less active recreation. Occupational therapy is in a unique position to contribute to the development and fulfillment of participation for athletes with diverse abilities. It is proven, that engaging in recreational sport activities of people with physical disabilities helps them in everyday occupations, such as dressing themselves, feeding, and transiting to different position and location (Law, 2002).

Talking to athletes with mental disability and their parents from our pilot research confirm that regular sports participation helps them in everyday activities in many ways: better motor skills which are shown in improved balance and physical fitness, longer focus and especially ability to insist on daily tasks until they are finished. The segregate group social dimension of inclusion in regular sports club is even more outstanding since these people usually have a less active lifestyle and are often less involved in social networks (Golnik Urnaut, 2007). Athletes from our pilot research report they are always happy to come to judo practice, they count days for next training, they know exactly on which week days the exercise takes place, they prepare their own sports equipment and they almost never miss judo hours for other family plans.

Methods

Researching the diverse abilities judokas' inclusion influence, we focused on their own and their parent's personal experience and opinion. The method of research is the analysis of social networks with the measurement of social support (Novak et al., 2004). The main source of the pilot survey data is the questionnaire for parents and interviews. We carried out 7 interviews with diverse abilities judokas and their parents, 3 on the phone and 4 in person on their homes. Our interviews lasted one and a half hour on average. 1 judoka answered independently, and 6 judokas answered together with their parents. Unfortunately, 7 people are not enough to present the network, but the first impression is that the data support the hypothesis about the main role of the closest family members. It is also clearly visible that the activity in the judo club opens the possibility for additional links in the social network judokas with diverse abilities. Further research will be needed for adequate data.

This paper therefore presents the perceived influence of regular judo practice on diverse abilities judokas in their daily activities. An online questionnaire was answered by 22 parents. We grouped the questions into four groups:

1. Feeling before judo practice:
- Positive: looks forward to training or other club activities, is glad and in good mode before leaving for training, is full of pleasant expectations, when is going to be next training.
- Negative: expecting club activity with fear or tension, is scattered before leaving for training, is anxious before going to training, feels unwell before going to training.

2. Feeling after judo practice:
- Positive: more calm than before, more focused than before, more capable of listening and better follows instructions than before, have problems with urinating, constipation or diarrhea have been observed, is physically noticeably more comfortable, more relaxed than before, more energy.

– Negative: more confused than before, harder to follow events than before, improved balance problems, feeling more irritable or unwanted than before, feeling worse than before.

3. Comparison with the condition before the respondent began to train judo: physically noticeably more skilled, better digestion than before, better balance than before, less marked irregularly moving patterns than before, more energy, feels better.

4. Functional improvement: more comfortable to dress and undress on her/his own, more skillful at tying the shoe laces, better manual skills, more independent in self-care, more accurate does daily tasks, more insisting on daily tasks, more stable when walking or slipping.

The respondents answered on the four point forced choice scale. For the questions about feeling the values "never" (1), "seldom" (2), "often" (3), and "always" (4) were used, and for the other two groups "strongly disagree"(1), "disagree" (2), "agree" (3), and "strongly agree"(4).

The scores for each group were computed as the average of the answers to questions of the group. The one tailed t-test for the difference of the averages from the middle of the scale dividing the rare events from the frequent ones on the feeling groups of questions, and agreement disagreement on the other two.

Results

The main theoretically significant result of the pilot study is a pervasive perception of positive influence of the regular practice on the diverse abilities judokas' condition and their feeling (Table 1).

Both negative parts of the questions about feeling before and after the judo practice have averages well below 2, meaning that negative feeling connected to the judo practice is very rare with the diverse abilities judokas.

With the positive feeling it is the other way around. Especially the positive anticipation of the judo practice is very frequent, as average score is well above the "often" mark. Similar high scores were reached in the other two groups of questions.

Table 1: The perceived influence of regular judo practice on diverse abilities judokas

Indicators	*N*	*Mean*	*SD*	*SE*	*t*	*p*
Feeling before judo practice						
Positive	22	3,45	0,67	0,146	6,50	0,0000
Negative	22	1,24	0,47	0,103	-12,28	0,0000
Feeling after judo practice						
Positive	21	2,84	0,4	0,089	3,80	0,0006
Negative	22	1,21	0,43	0,094	-13,74	0,0000
Comparison with the condition before she/he began to train judo	22	2,94	0,5	0,109	4,03	0,0003
Functional improvement	22	3,25	0,69	0,151	4,98	0,0000

All the averages were significantly different from the middle point of the scales on the level of $p < 0{,}001$. This indicates at least conviction on the part of judokas and their parents about the positive effect of the judo practice on their feeling and condition, both short-term and long-term.

Discussion and conclusion

It is interesting that the highest value (3,45) from our pilot research shows very positive judokas' feelings before going to judo practice in the club. That proves their enthusiasm experienced in the club by their coaches. Judokas express happiness, they seem proud to wear judo-gi (special judo equipment) like everybody else, meet other members of the club etc. Parents witnessed in interviews that their children exactly know which day of the week judo practice is on, they prepare their sports bag almost alone and if there are other family occupations in the schedule; they must consider judo practice so they don't miss it.

The second highest value (3,25) goes for functional improvement which parents notice in judokas everyday activities. Berčič (1983) wrote that regular systematic and organized sports and recreational activity preserves the bio-psychosocial balance of a physically impaired person and persons with special needs at the most appropriate level. A person who is well in control of his body and movement will strengthen his positive self-understanding. Conversely, a physically unsuccessful person will have a negative self-image. Negative self-evaluation affects not only the avoidance of sporting activities, but also creates a sense of incapability for the individual to perform daily tasks (Topolnik, 2007). In interviews parents especially pointed out the improved capability of their children to be able to persist in daily tasks from beginning to the end because of regular judo practice. They mentioned that procedures like house work, tiding up rooms, do the laundry, bring woods from the basement etc. are easier to perform. By parents opinion children have longer attention and understanding of different instructions.

Conclusions

The measurement of social support among athletes in an inclusive environment has not yet been examined. Data analysis, research results and the insight into both the social networks of inclusive sports club members and the quality and strength of their interrelationships, will enable us to contribute to a greater visibility and efficiency of inclusion in sport, and encourage ordinary sports organizations to increase the inclusion of all people into their programs.

References

BERČIČ, H., 1983. Vpliv večmesečne programirane kineziološke rekreacije in nekatere karakteristike psihosomatskega statusa telesno prizadetih oseb. Doktorska disertacija, Zagreb: Sveučilište v Zagrebu, Fakulteta za fizičku kulturu.

BRANDON, D., 1990. *Pet principov normalizacije*. Ljubljana: VŠSD.

BROWN, E., 2011. *Strong and Weak Ties: Why Your Weak Ties Matter*, Washington DC, 2011 [online]. [viewed 28 June 2019]. Available from: https://www.socialmediatoday.com/content/strong-and-weak-ties-why-your-weak-ties-matter

FILIPČIČ, T. and JERMAN, J., 2018. *Pomen gibanja za kakovost* življenja *oseb s posebnimi potrebami.* Ljubljana: Fakulteta za šport.

GOLTNIK URNAUT, A., 2007. Šolske športne *dejavnosti in samopodoba mladostnikov z ovirami v gibanju*. Doktorska disertacija, Ljubljana: Pedagoška fakulteta

LAW, M., 2002. Participation in the occupations of everyday life. Distinguished Scholar Lecture. American Journal of Occupationl Therapy, 56; 640-649. [viewed 28 July 2019]. Available from: https://ajot.aota.org/article.aspx?articleid=1869229

MIHORKO, B., ŠTRUMBELJ, B., ČANDER, J. and CIMERMAN SITAR, M., 2014. *Smernice za šport in rekreacijo invalidov.* Maribor: Društvo vojnih invalidov.

MURATA, N., 2005, *Mind over muscle: Writings from the founder of judo Jigoro Kano*, Tokyo: Kodansha International Ltd.

NOVAK, M., ČERNIGOJ SADAR, N., DRAGOŠ, S., DREMELJ, P., FERLIGOJ, A., HLEBEC, V., … NAGODE, M., 2004, *Omrežja socialne opore prebivalstva Slovenije.* Ljubljana: Inštitut Republike Slovenije za socialno varstvo

REŠETAR, B., 2017. Prava djece s invaliditetom - prava djece s problemima mentalnog zdravlja. V M. Jakovljević in D. Begić (ur.), *Socijalna psihijatrija (str. 4–15)*. Zagreb, Medicinska naklada.

RUTAR, D., DROBNE. J., PATAFTA. T., LEVEC. A., JERAŠA. M., KORENE. I. and PRAZNIK, I., 2010. *Inkluzija in inkluzivnost: Model nudenja pomoči učiteljem pri delu z dijaki s posebnimi potrebami, ki so integrirani v redne oddelke*. D. Rutar (ur), Center RS za poklicno izobraževanje. Ljubljana.

RUTAR, D., 2017. *Inkluzija otrok s posebnimi potrebami: za družbeno pravičnost*. Kamnik: CIRIUS

ŠUC, L., BUKOVEC, B., and KARPLJUK, D., 2017. *The role of inter-professional collaboration in developing inclusive education*. International journal of inclusive education. Retrieved from https:// doi: 10.1080/13603116.2017.1325073.

TOPOLNIK, I., 2007. *Motivi za* športno *dejavnost oseb s posebnimi potrebami, kot jih vidijo njihovi starši.* Diplomsko delo, Ljubljana: Pedagoška fakulteta.

Digital media use in preschool children and its socio-emotional and health outcomes

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Abstract

Introduction: Exposure of young children aged 6-7 to all forms of digital media (DM) is increasing. Furthermore, there are growing concerns about the impact of DM use on children and families. In this research, we report preliminary findings from a small-scale study aiming to investigate the relationship between children's DM use in home environment and socio-emotional, as well as health outcomes. *Methods:* In the spring of 2019, a survey was conducted among 95 parents of children aged 6 to 7 (44 girls and 51 boys) in three primary schools in Osijek, Croatia. They provided the information on their children's DM use in home environment, and on some socio-emotional and health outcomes. *Results:* We examined the relationship between the frequency of using different DM in home environment and the purpose of such use during a typical working day or weekend, with parental estimates of children's health, general happiness, peer relationships, level of frustration, attention, and prosocial behaviour. Family's socio-economic status and parental perception of DM were used as control variables. *Discussion and conclusion:* Exposure of young children aged 6 to 7 to all forms of DM might interfere with children's socio-emotional and health outcomes. Our findings suggest that preventing an excessive use of DM may reduce the likelihood of socio-emotional and health problems in children.

Key words: digital media, preschool children, socio-emotional and health outcomes

Introduction

Exposure of young children to all forms of digital media (DM) in home environment is increasing. At the same time, there are growing concerns about the impact of DM use on children and families, with parents urging for guidance.

Although scientists have been trying to provide parents and educators with safety guidelines for years, children are starting to use DM at a younger age than ever before, with DM becoming more available and versatile. Therefore, new research on the relationship between DM use and different socio-emotional and health outcomes is required. Previous research relates DM use to various health problems, e.g. obesity, ADHD, sleep disorders, psychological distress, depression, etc. (Strasenburger, Jordan, & Donnerstein, 2010). However, different studies use different measures of screen time and do not always fully address the purpose of use. Many studies involving young children focused on their experiences with DM in educational setting, with less research examining the use of DM in a family setting. This trend has been changing in the last decade (Marsh, 2004; Stephen, Stevenson, & Claire, 2013), but further understanding is still much needed. In Croatia, majority of kindergartens prohibit children from using any DM, limiting all their interactions with DM to home environment, with parents as their first teachers on the matter. Prior research shows that parents of children aged 3-4 have a tendency to underestimate their contribution to how their children learn to use DM (Plowman, McPake, & Stephen, 2008). Research also highlights the importance of parental perception of DM in regard to children's use of DM (McPake et al., 2005; Plowman et al, 2005).

In this research, we report preliminary findings from a small scale survey aiming to investigate the relationship between children's use of DM in home environment and certain socio-emotional, and health outcomes. Family socio-economic status, as well as positive and negative parental perception of children's DM use are taken into consideration.

Methods

Participants and procedure

The study was conducted in three primary schools in Osijek, Croatia. It included parents (83.5% were mothers) of 97 children (54 boys and 43 girls, mean age 6.5), who responded to the questionnaire designed for this study. The parents were approached by a school psychologist during their children's first enrolment in primary school. All those who decided to participate signed a consent form and completed the questionnaire. All the families had a fairly good socio-economic status and good living conditions.

Measures

Parents gave estimates about the time their children spend using DM during a typical working day or weekend (in hours), using a predefined list of activities and devices: (a) *using a computer;* (b) *playing games using a game console*; (c) *using a tablet/smartphone to play games, browse the Internet, watch videos, visit social networks, etc.*; (d) *watching TV or DVD*. Additionally, the final measure of children's DM use was calculated as the sum of all the estimated amounts of

time children spent doing those individual activities, separately for a working week and for the weekend.

The purpose of children's DM use was assessed by parents using a scale from 1 (*never*) to 5 (*very often*) for each of the following activities: playing games or using apps for entertainment, browsing the internet, watching TV programs, watching YouTube videos, listening to music, posting photographs, videos or music, visiting social network sites, communicating with friends and family using Skype, Viber or WhatsApp, playing educational games (learning letters of the alphabet, learning numbers, learning foreign language, etc.).

Socio-emotional and health outcomes were assessed by parents using a scale from 1 (*rarely or never*) to 5 (*almost always*) to rate the extent to which each statement can be applied to their child. There were 11 items, and the Factor Analysis indicated three subscales: Dissatisfaction (Cronbach's α=.628), Frustration and attention problem (α=.687), and Social relations (α=.548). There was an additional item regarding how often the child feels sick.

On a scale form 1 (*fully disagree*) to 5 (*fully agree*), parents gave their opinion regarding 24 statements about the positive and negative effects DM has on their children (adapted from Nikken & Schols, 2015). There were 10 items for positive and 14 for negative perception. The Cronbach's α of scales was: 0.820 and 0.793 respectively.

Finally, the SES was assessed by parents rating their financial status on a scale from 1 (*much lower than most families*) to 5 (*much higher than most families*).

Results

Firstly, we wanted to investigate the amount of time children spend using different DM during a typical weekday and during weekend. Results (Table 1) show that children use DM much more during the weekend compared to the working week.

Table 1. Descriptive statistics and t-test results for time spent using different DM during working week and weekend (in hours)

Activities	*M (SD)*		*t-test*	
	Working week	*Weekend*	*t*	*P*
Using a computer	.28 (.65)	.49 (1.00)	-3.217	.002
Playing games using a game console	.25 (.50)	.53 (.89)	-3.878	<0.001
Using a tablet or a smartphone to play games, browse the Internet, watch videos, visit social networks, etc	.92 (.80)	1.38 (1.10)	-6.544	<0.001
Watching TV or DVD	1.26 (.81)	1.94 (1.11)	-6.804	<0.001
Total	2.68 (1.79)	4.33 (2.46)	-8.544	<0.001

As for the purpose of use, the data show that what children do most is watch TV or YouTube videos, and what they do least is visit social network sites or communicate with their friends and family using DM (Figure 1).

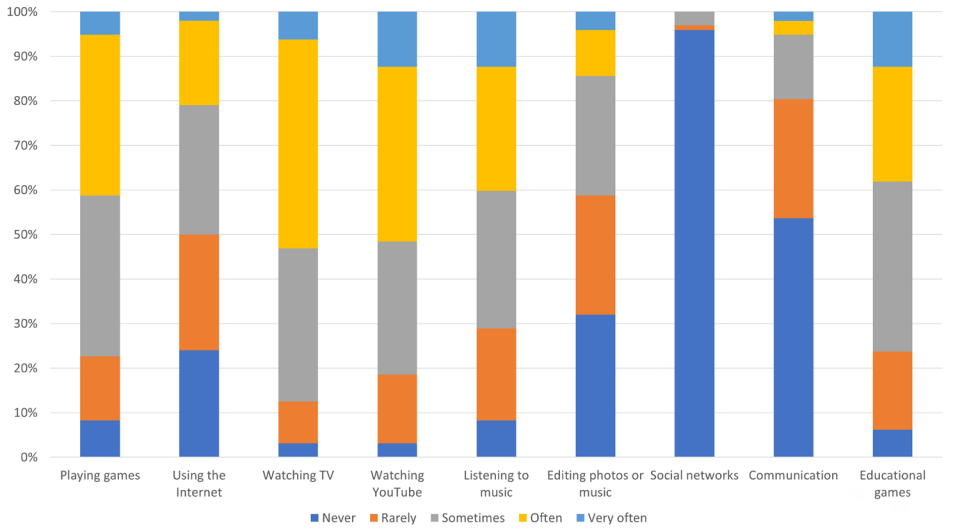

Figure 1. The percentage of children using DM for different purposes

As for how often children experience different socio-emotional and health problems, parents report that such problems occur rarely to sometimes (Table 2). Descriptive data for parental perception of DM are presented in Table 2.

Table 2. Descriptive statistics for variables in the study

Variable	*Mean*	*SD*
Child feels sick	1.32	.66
Dissatisfaction	1.91	.63
Frustration and attention problems	1.66	.53
Social relationships	1.40	.50
Positive perception of DM	27.78	6.16
Negative perception of DM	49.90	7.37

The relationship between children's DM use (time spent using different devices and the purpose of such use), its socio-emotional and health outcomes and its positive and negative parental perception were tested using non parametric correlations due to non-normal distribution of the variables. Only a few correlations were statistically significant. The incidence of child sickness is positively associated with time spent watching YouTube (r_s=.227, p=.027), the level of dissatisfaction is negatively related to time spent playing educational games (r_s=-.250, p=.015), the level of frustration and problems with attention are pos-

itively related to negative parental perception of DM use (r_s=-.250, p=.015) and the level of problems in social relationships is positively related to time spent using a computer during the weekend (r_s=-.261, p=.012).

Finally, we wanted to see if there were any differences between the children who use DM<2 hours a day, 2-3 hours a day or >3 hours a day during working week or at the weekend, when it comes to socio-emotional and health outcomes and their parents' perception of DM.

One-way ANOVA shows no differences in average values of variables in terms of time spent using DM during a typical working day. However, in terms of DM use during the weekend, there were significant differences, specifically concerning social relationship problems (F=3.246, p=0.044). Post-hock Scheffe test shows differences between the group that uses DM more than 3 hours a day (M=3.43, SD=1.735) and the group that uses it from 2 to 3 hours (M=3.58, SD=.809). This indicates that children who spend more than 3 hours a day using DM have more social problems than children who spend less time using DM, as assessed by their parents. Furthermore, there are significant differences between these groups when it comes to positive parental perception (F=12.111, p<.001), with post-hock Scheffe test showing differences between the group that uses DM the most (M=29.94, SD=5.435) and both other groups (M_1=22.77, SD_1=6.19 and M_2=25.19, SD_2=5.30), that is, parents of children who use DM the most during the weekend have more positive perception of DM.

Discussion

Our results show that preschool children in our sample spend an average of 3 hours a day using DM during the week and over 4 hours a day at weekends. They most often watch TV, which is in accordance with research from other countries (Ofcom, 2018). Since they are only 6-7 years old, they rarely use social networks, but the problem is that some of them still visit social network sites, despite the fact that they are legally forbidden to access them.

Parents report that socio-emotional and health problems occur rarely or sometimes, but correlational analyses still show that such problems are related to some aspects of DM use. Children who spend more time watching YouTube videos usually feel sick more often, and those who use a computer for longer periods during the weekend are reported to have more problems in social relationships. Recent studies show that YouTube watching has gained in popularity among 8-11 year olds (Ofcom, 2018). Furthermore, the ANOVA indicates that children who spend more than 3 hours a day using DM tend to exhibit more problems in social relationships than those who use it less. This is an important finding, indicating to parents what the screen time limit might be.

However, children who spend more time playing educational games (e.g. games for learning the alphabet, numbers, foreign language) have lower level of dissatisfaction, i.e. they are happier, tend to help others, etc. This result is in

line with previous studies which found that playing prosocial games can have a positive effect on children's prosocial behaviour (Gentile et al., 2009).

All the correlations are rather weak, but they still indicate that some aspects of DM use might be related to certain socio-emotional and health outcomes in preschool children.

Unsurprisingly, our results indicate that parents with positive perception of DM have children that spend more time using it, which is confirmed by similar studies (Vaala & Hornik, 2014). Furthermore, enabling parental mediation of their children's use of DM often leads to an increase in time children spend using DM, and is positively related to both more opportunities for learning, but also more risks (Livingstone et al., 2017). Not surprisingly, parents who report more frustration and attention problems in their children have more pronounced negative perception of DM use.

Conclusion

Results from this small-scale study point to the importance of limiting total screen time for preschool children, since it might be related to negative health and socio-emotional outcomes. Furthermore, the results point to different relations regarding the specific content children use, with educational games being related to some positive socio-emotional outcomes. Further research is required on more representative samples, possibly using experimental design.

References

GENTILE, D. A., ANDERSON, C. A., YUKAWA, S., IHORI, N., SALEEM, M., MING, L. K., … SAKAMOTO, A. (2009). The effects of prosocial video games on prosocial behaviours: international evidence from correlational, longitudinal, and experimental studies. Personality & social psychology bulletin, vol. 35, no. 6, pp. 752–763.

MARSH, J. (2004). The techno-literacy practices of young children. *Journal of Early Childhood Research,* vol.2, no. 1, pp. 55–66.

NIKKEN, P. &SCHOLS, M. (2015). How and Why Parents Guide the Media Use of Young Children. *Journal of Child and Family Studies*, vol. 24, pp. 3423-3435.

LIVINGSTONE, S., ÓLAFSSON, K., HELSPER, E.J., LUPIÁÑEZ-VILLANUEVA, F., VELTRI, G.A. and FRANS FOLKVORD, F. (2017). Maximizing Opportunities and Minimizing Risks for Children Online: The Role of Digital Skills in Emerging Strategies of Parental Mediation. *Journal of Communication,* vol. 67, no. 1, pp. 82-105.

Ofcom (2018). Children and parents: Media use and attitudes report 2018 [online]. [viewed 5 May 2019]. Available from: https://www.ofcom.org.uk/__data/assets/pdf_file/0024/134907/Children-and-Parents-Media-Use-and-Attitudes-2018.pdf

PLOWMAN, L., MCPAKE, J., and STEPHEN, C. (2008). Just picking it up? Young children learning with technology at home. *Cambridge Journal of Education,* vol.38, no. 3, pp. 303–319.

STEPHEN, C., STEVENSON, O., and ADEY, C. (2013). Young children engaging with technologies at home: The influence of family context. *Journal of Early Childhood Research*, vol.11, no. 2, pp. 149-164.

VAALA, S., and HORNIK, R. (2014). Predicting US infants' and toddlers' TV/video viewing rates: Mothers' cognitions and structural life circumstances. Journal of Children and Media, vol. 8, no. 2, pp. 163–182.

Public health measures for managing pollution with legionella in Slovenian swimming pools

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Abstract

Problem presentation. Swimming pools are popular for recreational sports, but are exposed to microbiological contamination. The most frequent microbiological contamination are fecal bacteria. Especially are important pollution with *Legionella*. *Legionella* infection is lethal if the infected patients are not treated on time, and its outbreaks are a great public health problem. Its incidence is rising. *Purpose.* The purpose of the article is to present public health measures for the control of *Legionella* in Slovenian swimming pools. *Methods.* This article is a review of the literature on public health measures to control the pollution of *Legionella* in swimming pools. I have chosen literature from books, domestic, world famous public health journals, and electronically published articles (the website of the National Institute of Public Health (NIPH) and the World Health Organization (WHO), Medline, Pubmed, etc.). *Results.* The risk definitions and measures for the prevention of legionellosis preventive measures that reduce the possibility of *Legionella* growth, measures to detect the presence of *Legionella* in swimming pools and measures if the disease occurs are shown. *Conclusions.* Prevention and treatment of legionellosis is an interdisciplinary work involving the planned and regular implementation of sanitary-technical and hygienic procedures, microbiological control, and urgent action in the determination of legionella or legionellosis.

Key words: Legionella, swimming pools, risk assessment, preventive measures

Introduction

Legionella are gram negative bacteria belonging to the family *Legionellaceae*. They are aerobic bacteria, whose main living environment is natural water. *Legionella* are extremely resistant to environmental factors. They are able to grow

and reproduce at temperatures from 25 to 42 °C. In nature and in artificial cultures they can survive even at temperatures from 0 to 63 °C. Their habitats are protozoa, especially amebae (Gubina and Ihan, 2002; Brooks et al., 2010; Greenwood et al., 1997). Genus *Legionella* contains 40 known species and 61 different serological groups. For eighteen (18) species it was shown to be pathogenic for humans, and the most of them are able to cause disease. *L. pneumophila* serological Group 1 most commonly causes legionnaire's disease (that can be easily proven with an urine assay) (Sočan, 2002). Clinical symptoms caused by infection with *Legionella* are collectively known as legionellosis. The most common are Legionnaires' disease (pneumonia) and Pontiac fever (Marolt Gomišček and Radšel Medvešček, 2002).

The purpose of our contribution was to show measures to prevent legionellosis: a) the preventive measures, which reduce the possibility of *Legionella* growth, b) measures after the detection of *Legionella* in the swimming pools and c) measures in the event of illness due to legionellosis.

Epidemiology

Legionella was discovered in 1976, when an outbreak of pneumonia resulted in 221 participants in the Convention of the American legionaries in Philadelphia, of which 34 had died. That is why they named the pneumonia legionnaire's disease. The bacterium, which was isolated from the lungs of the diseased legionaries, was called *L. pneumophila*. Legionnaire's pneumonia is acute bacterial pneumonia and occurs as sporadic disease, as a set of cases and as well as an outbreak. Bacteria *Leigonella* spreads in water droplets (aerosols). Usually the source of the infections is tap water, water for cooling and humidifying the air and water from swimming pools, in hot spas where the water is swirling and forming an aerosol. For humans, the most virulent is *L. pneumophila*. In 85 % of cases pneumonia is caused *by L. pneumophila*, particularly serological group 1 (Sočan, 2002; Pond, 2005). The exact incidence of legionellosis is not known, because the various methods are used for detection of *Legionella*. Also, reporting of the occurrence of *Legionella* are still not accurate. For example, the *L. pneumophila* can be diagnosed by the antigen in the urine of the patient, but other types of *Legionella* can not be detected by this method. Some of the tests for the *Legionella* detection have low sensitivity, so the results may be falsely negative. *Legionella* can not be diagnosed if the patient dies without treatment. Some of the milder forms of disease, however, are not recognized. Cases of passengers are not reported to our national system databases (European Centre for Disease Prevention and Control, 2019).

According to the World Health Organization (WHO) in Europe, Australia and the United States about 10 to 15 cases per million inhabitants are reported (World Health Organisation, 2018). The Center for Disease Control and Prevention in Atlanta in the United States (CDC) reports that the incidence of legionellosis increased. Since 2003 it has increased from 0.80 to 1.4 cases per 100.000 inhabitants (Centre for Disease Control and Prevention, 2018). In the

European Union (EU), the incidence is 1.4 cases per 100 000 inhabitants. Most of the reports came from France, Germany, Italy and Spain, 69% of all reports in EU. Every year about 1000 passengers in Europe are infected and suffered legionnaire's disease (European Centre for Disease Prevention and Control, 2015). According to the epidemiological surveillance of communicable diseases in Slovenia for 2016, exactly, 93 cases were reported (62 men and 31 women) to develope Legionnaires' disease, of which 5.4% of patients died (Nacionalni inštitut za javno zdravje, 2016).

Risk Characterization

We focus on the problem of *Legionella* in swimming pools, only because, the swimming pool areas shown increased risk for the propagation of the *Legionella*. The risk of infection with *Legionella spp.* is difficult to assess. Specifically, the risk is elevated in the pools with the circulating warm water, which creates an aerosol. So far if Legionella is present, it can be transmitted to the humans. Risk factors are specific biological characteristics of *Legionella* strains, vulnerable subjects, the technical characteristics of swimming pools, and the technical characteristics of installations for hot water (Pond, 2005; World Health Organisation, 2007; World Health Organisantion, 2006; Hojs et al., 2002).

Risk factors

Biological and immunological factors of Legionella virulence

Biological and immunological factors of *Legionella* virulence are not fully known. In particular, it is important to know how *Legionella* enters the phagocytes in the lungs and multiplies in them. Virulent factors in this case are: the expression of multiple proteins during infection of macrophages (MIPS, protein, etc.), the expression of specific proteases and plasmids of *Legionella* (Pond, 2005 Gubina and Ihan, 2002; Brooks et al., 2010; Greenwood et al., 1997). *Legionella* is transmitted by aerosols. Virulence is important for the survival of the *Legionella* in the aerosol. *Legionella* is more virulent, if it persist longer in the aerosol (Pond, 2005; Gubina and Ihan, 2002; Brooks et al., 2010; Greenwood et al., 1997).

Risk factors – humans

Humans are defended against *Legionella* by cell-mediated immunity. Man can be exposed to *Legionella* by whirlpool tubs, but most of them do not develop signs of infection, they show only asymptomatic infection with increased level of specific antibodies. Milder, influenza-like infection, called Pontiac fever can be manifested. Severe pneumonia called Legionnaire's disease is not manifested so often (Pond, 2005). Particularly vulnerable for infection are the elderly, tobacco smokers, patients with pulmonary disease and subjects with impaired immunity, due to illness or medication. There are more infections detected in men (Pond, 2005; World Health Organisation, 2007; World Health Organisans

tion, 2006; Hojs, 2002). According to the Slovenian report of the epidemiologp ical monitoring of *Legionella* for the year 2016 it appears twice more often in men (Nacionalni inštitut za javno zdravje, 2016).

Risk factors – swimming pools

The environmental risk factors at swimming pool facilities are inadequate construction, inappropriate managing and maintaining, pools with the higher production of aerosols, technical interventions in facilities and interruptions of the water cleaning system. Highly favorable conditions for the growth of *Legionella* are warm water or higher temperatures, a smaller volume/quantity of water and larger number of bathers, turbulence (fast movement of the water and the bubbles), and bacterial nutrients washed of bathers (Pond, 2005; World Health Organisation, 2007; World Health Organisantion, 2006; Hojs, 2002). Sea water is not a suitable environment for *Legionella*. There is evidence that sodium chloride inhibits growth of *L. pneumophila* (Pond, 2005). Swimming pools with sea water does not pose a risk for legionellosis.

Sources of infection with Legionella

The possible origin of infection with *Legionella* are showers, plunge pools, cooling towers, humidifiers and the highest risk of infection with *Legionella* are pools with bubbling warm water, having a temperature between 20°C and 50°C that can form an aerosol (Pond, 2005).

Infection with Legionella

Infection with *Legionella* is caused by inhalation of small particles of water or aerosol. Typically, the bacterium is not transmitted from person to person (Pond, 2005).

The levels of measures for the prevention of Legionnaires' disease

For easier understanding of the measures, we divided them into three levels:

- Preventive screening and preventive measures
- Measures in the presence of *Legionella* in the water supply network
- Measures in the presence of the occurrence of Legionnaires ' disease

Precaution and preventive actions in swimming pools

Maintenance of swimming pools must be provided by internal control plans, ensuring the safety of the bathing water. The plan allows identification of the microbiological, physical and chemical agents, which may present a hazard to human health. The implementation of the necessary measures and vigilance in specific places - critical control points, must be controlled at the potential sites,

where the risks can occur. The plan also includes the sampling sites, methods of laboratory testing, the sampling frequency of the bathing water, and appropriate documentation. The management plan is drawn up in accordance by the National Institute of Public Health (NIPH) (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03., Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no.26/07).

The managers of the swimming pool have to be educated on functioning of all of the systems in the swimming pool, where there is a potential risk. They have to manage and maintain the pools, so that there is less risk of infection, including *Legionella*. Security measures are carried out at the pool decks, devices for cleaning, sanitary facilities, showers, hot baths, cooling towers and air humidifiers. The control of *Legionella* contamination in the pools is in principle similar to the control for the supply of drinking water. We have to ensure proper temperature of the hot and cold water (cold water below 20°C and the warm water over 60°C), regular maintenance to prevent water retention within devices, emptying the swimming pools, complete cleaning. On a daily basis water in the pool should be replaced in an amount of at least 30 litter per bather. In swimming pools with swirling warm water, we need to ensure a continuous flow of water and replace at least half of the pool water daily (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

The prevention of microbiological and physico-chemical conditions, appropriate for *Legionella* development, depends on the behavior of the bathers. Before entering the pool, bathers need to shower their body and feet in disinfection pool. Children less than three years old should use swim diapers in the pool. We recommend bathing caps and clean shoes (17, 18 19, 20). In swimming pools with swirling hot water, urination, feces and food consumption of the bathers are strictly prohibited. It is recommended to limit the number of visitors per day. We have to follow or take into account the Slovenian policy 'Rules on minimum hygiene requirements, that must be met by baths and bathing in the swimming pools' (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

Each pool must be equipped with devices for the continuous temperature measurement, free and bonded chlorine, redox potential and pH of bathing water. The values of all parameters should be checked once daily with a handset instruments (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

All cleaning procedures must be adopted in a way to prevent bacterial growth and reproduction of the Legionella, even in the worst cases, when the maximum occupancy of bathers has been reached, according to Slovenian regulations (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

Recommendations for a management plan for cleaning swimming baths or pools must contain the following information: what, how, when and who will clean the facilities. Swimming pools must be cleaned daily. Cleaning the spa systems must include mechanical and chemical cleaning with appropriate disinfection. The swimming pools are cleaned at least once a year, it is necessary to be fully emptied and chlorinated for two hours. The same procedure must be carried out in swimming pools seasonally (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

The most commonly used disinfectant for water in swimming pools is chlorine. It is suitable because it works on the majority of micro-organisms, is easy to use, its concentration can be measured in a simple way. It is available in several forms (granules, liquid, tablets, etc.), with different proportion of free chlorine. Limit value for free chlorine is 0.3 to 0.6 mg/l and for the bound chlorine less than > 0.3 mg/l (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15). Chlorine in swimming pool water is binded to organic materials of bathers (for example urine, sweat) and it forms chloramine, which slows its effective cleaning power. For cleaning and rinsing water in swimming pools there are used disinfectants that can also remove the *Legionella* (it is recommended to use at least 5 mg of chlorine per liter). It is also necessary to inspect and clean the area around the pool. Chlorine shock in warm water should be carried out with 50 mg/l of free chlorine for 1 hour (Official of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no.26/07).

Filters in the pools should be cleaned at least once a week; in swimming pools with swirling warm water it is necessary to examine and clean the filters on a daily basis (15, 16). pH should be maintained at 7.2-7.8 and 7.2-8.0. This is important for bathers comfort and safety. The managers of swimming pools have to control corrosion and chemical damage. If the biocides increase, they will cause irritation of the eyes and skin. If the pH is increased, the chlorine binds and becomes less effective. Cyanuric acid helps to balance the chlorine, especially in outdoor pools, when chlorine is affected by UV light and the sun. Carbonates and bi-CARB are added to balance pH, because of bather's organic pollution (Official of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the

Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

For the construction of the baths, we use only those materials, which are being tested and are suitable for use. We have to consider materials that prevent the growth of microorganisms. With this, we do not mean only on the pool surface, but also taps and other water installation devices. We do not recommended natural materials such as hemp or natural rubber, because these materials contribute to biofilm formation. Pipe, components of the hot tub should have the smallest possible area. We do not recommend moving and bowed tubes, because they increase the surface area and allows fluid retention, which increases the risk for the creation of biofilm. Pipes must be accessible for cleaning. Tubes must also be easily removed and cleaned and disinfected (Official of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

In swimming pools with swirling warm water we need to measure chemical and microbiological indicators once per year. According to national regulation on minimal standard conditions of hygiene and other requirements for bathing water, we sampled water for *Legionella* control once a year. Well maintained pools should not have *Legionella* presence in the water samples. Maintenance and cleaning devices (those with tele-heating, ventilation, air-conditioning and showers) are carried out weekly or monthly. In hot tubes we are sampling air vents (with swabs), shower heads, hoses and pipes, inlet and outlet water (one liter of water), filters, compensatory pools and biofilms (Official of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

The operator must keep appropriate documentation about disinfection, cleaning, administration and maintenance of public baths. (World Health Ors ganisation, 2006; Official of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15. Official Gazette of the Republic of Slovenia, no. 88/03, Official Gazette of the Republic of Slovenia, no. 56/06. Official Gazette of the Republic of Slovenia, no. 26/07).

Measures after detection of *Legionella* in the swimming pools

Our legislation recommends that in the sample bathing water *Legionella* may not be present. If we detect *Legionella* in bathing water, a water sample is noncompliant (Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15.). WHO criteria for the assessment of the suitability of bathing waters for swimming recommend, that at the time of detection of 100 bacterial colonies per liter (colony forming units-CFU/l) is to say, that the system is under supervision. Only if the number of bacterial colonies per liter > 100, we begin with measures (Pond, 2005).

In table 1 we presented the guidelines for the results interpretation of the trials on *Legionella* in swimming pools (Pond, 2005).

Table 1: WHO guidelines for the results interpretation of the trials for Legionella in swimming pools (Pond, 2005)

Legionella (CFU/L)	*Interpretation/action required*
< 100	- is under control
≥ 100 to £ 1000	- resampling and follow/keep it under control - review, risk characterization, and measures – refilling and sampling the next day and 2-4 weeks later
> 1000	- stop the use of the pool and implement the measures - use chlorine-shock with the 50 mg/l of free chlorine, circulating for one hour in pool with circulating warm water - emptied, cleaned and disinfected - review, risk characterization, the necessary measures - refilling and sampling the next day and 2-4 weeks later - about the event must be notified to the institution of public health - Swimming pools do not apply for standards if the relevant definition of risk occur

Measures in the event of an outbreak of legionellosis

Epidemiological indication is defined if we identify two or more cases in the same community within six months when *Legionella* is confirmed. For the control of *Legionella* contamination in the pools is responsible The European Legionnaires' disease Surveillance Network (ELDSNet), which is coordinated by the European Centre for preventive actions (European Centre for Disease Prevention and Control - ECDC). Network is open to all EU Member States and also Switzerland and Norway. By profession, experts are epidemiologists and microbiologists (European Centre for Disease Prevetion and Control, 2019).

National Institute for public health in Slovenia must investigate and confirm an outbreak of *Leginella spp.*. We took samples for microbiological analysis and the sampler must be authorized. The samples have to be examined in the laboratory, which is accredited to ISO/IEC 17025 standard (International Organization for Standardization, 2005) (European Centre for Disease Prevetion and Control, 2019). Than the analysis of water samples is performed. After the confirmation of an outbreak or epidemy, the disease must be reported to the National institute of public health. The x-ray of the lungs is necessary to confirm legionnaire's pneumonia. An epidemiologist has to perform environmental anamnesis (European Centre for Disease Prevetion and Control, 2019). It is necessary to prohibit the use of the infected pool (European Centre for Disease Prevetion and Control, 2019). In order to identify potential sources of *Legionella* in the pool (swimming pools, pools with swirling warm water, showers, or all resources that contain water with temperatures above 20°C and can release aerosol), it is necessary to inspect the facility and take samples. It is necessary to define and determine the risk. Swimming pools do not apply as

healthy if the relevant definition of risk occurred (European Centre for Disease Prevetion and Control, 2019).

Conclusions

Prevention and treatment of legionellosis is an interdisciplinary work involving the planned and regular implementation of sanitary-technical and hygienic procedures, microbiological control, and urgent action in the determination of *Legionella* or legionellosis. Swimming in swimming pools is recommended, but we must be aware of the epidemiological risks. In addition to the risk of drownings, a number of other diseases, such as microbiological infections, we can acquire the most dangerous among them by *Legionella* (Nacionalni inštitut za javno zdravje, 2019; Nacionalni inštitut za javno zdravje, 2019; Bilban, 2015).

References

BILBAN M., 2015 Kako se ubraniti legionele. Skrita nevarnost v vodovodu [online]. [viewed 20 July 2019]. Available from: https://www.dlib.si/stream/URN:NBN:SI:DOC-CAVAD5WZ/6f491a39-efda-4b35-8006-d49caeb-2da97/PDF

BROOKS G.F., BUTEL J.S., MORSE S.A., 2010. Jawetz, Melnick & Adelberg's medical micribiology. New York: Lange Medical Books/McGraww-Hill Companies.

CENTRE FOR DISEASE CONTROL AND PREVENTION, 2018. Legionella (Legionnaires' Disease and Pontiac Fever) [online]. [viewed 20 July 2019]. Available from: http://www.cdc.gov/legionella/surv-reporting.html.

EUROPEAN CENTRE FOR DISEASE PREVETION AND CONTROL, 2019. European Legionellars'a Disease Surrveillance Network (ELDSNet) [online]. [viewed 20 July 2019]. Available from: https://ecdc.europa.eu/en/about-us/partnerships-and-networks/disease-and-laboratory-networks/eldsnet.

EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL, 2015. Surveillance report. Annual Epidemiological Report for 2015. Legionnaires' disease [online]. [viewed 20 July 2019]. Available from: https://ecdc.europa.eu/en/publications-data/legionnaires-disease-annual-epidemiological-report-2015.

GREENWOOD D., SLACK R., PEUTHERER J., 1997. Medical Microbiology. A guide to mikrobial infections: pathogenesis, immunity, laborator)y diagnosis and control. New York, Edinburgh, London, Madrid, Melbourne, San Francisco, Tokyo: Churchill Livingstone.

GUBINA M., IHAN A., 2002. Medicinska bakteriologija z imunologijo in mikologijo. Ljubljana: Medicinski razgledi.

HOJS A., PETROVIČ A., FURLAN N., 2002. Preprečevanje legioneloz v javnih objektih. Zdravstveno Varstvo št. 41: 299-304.

MAROLT GOMIŠČEK M., RADŠEL MEDVEŠČEK A., 2002. Infekcijske bolezni. Ljubljana: Tagram.

NACIONALNI INŠTITUT ZA JAVNO ZDRAVJE, 2016. Epidemiološko spremljanje nalezljivih bolezni v letu 2016 [online]. [viewed 20 July 2019]. Available from: https://www.nijz.si/sites/www.nijz.si/files/datoteke/epidemiolosko_spremljanje_nb_slo_2016.pdf

NACIONALNI INŠTITUT ZA JAVNO ZDRAVJE, 2019. Pogosta vprašanja o kopalni vodi. [online]. [viewed 20 July 2019]. Available from: http://www.ivz.si/index.php?akcija=podkategorija&p=162

NACIONALNI INŠTITUT ZA JAVNO ZDRAVJE, 2019. Legioneloza. [online]. [viewed July 2019]. Available from: http://www.ivz.si/index.php?akcija=podkategorija&p=162

POND K., 2005. Water Recreation and disease. Plausibility of Associated Infections: Acute Effects, Sequelae and Mortality. London: WHO.

Pravilnik o minimalnih higienskih zahtevah, ki morajo izpolnjevati kopališča in kopalne vode v bazenih za kopalne vode, 2015. Official Gazette of the Republic of Slovenia, no. 39/11, 64/11 – corr. and 59/15.

Pravilnik o tehničnih ukrepih in zahtevah za varno obratovanje kopališč in za varstvo pred utopitvami na kopališčih, 2003. Official Gazette of the Republic of Slovenia, no. 88/03.

Pravilnik o tehničnih ukrepih in zahtevah za varno obratovanje kopališč in za varstvo pred utopitvami na kopališčih 2006. Official Gazette of the Republic of Slovenia, no. 56/06.

Pravilnik o tehničnih ukrepih in zahtevah za varno obratovanje kopališč in za varstvo pred utopitvami na kopališčih 2007. Official Gazette of the Republic of Slovenia, no.26/07.

SOČAN M., 2002. Okužbe z legionelami. Zdravstveno Varstvo, št. 41: 285-289.

WORLD HEALTH ORGANISANTION, 2006. Guidelines for safe recreational water enviroments. Swimming pools and similar environments. 2nd ed. Geneva: WHO Library Cataloguing-in-Publication Data.

WORLD HEALTH ORGANISATION, 2007. Legionella and the prevention of legionellosis [online]. [viewed 20 July 2019]. Available from: http://www.who.int/water_sanitation_health/emerging/legionella.pdf

WORLD HEALTH ORGANISATION, 2018. Legionellosis [online] [viewed 20 July 2019]. Available from: http://www.who.int/en/news-room/fact-sheets/detail/legionellosis).

Physical activity and stress management in nursing students

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Abstract

Introduction: Physical activity (PA) has been recognized as one of the most effective stress managing techniques. For students it is crucial to acknowledge the effects of PA, since their target group has been contemporary identified as being under the strong influence of stress. *Methods:* Our survey was based on descriptive non-experimental quantitative research method. A structured questionnaire was employed for data collection by students of Secondary School of Nursing in Ljubljana and Angela Boškin Faculty of Health Care in Jesenice in the time frame of March and May 2017. Purpose sampling included 61 persons of full age at the secondary school and 98 faculty students and reached 79.5% level of realisation. *Results:* Our respondents mostly carry out PA as they believe it reduces their tension (M = 4.27; SD = 0.98). 78.7% high school students and 91.8% faculty students find it easier to manage everyday stressful situations this way. Based on our purpose sample, we can confirm that PA significantly reduces the occurrence of mental (rs = 0.174; p = 0.029) and behavioural (rs = 0.193; p = 0.015) stress symptoms. *Discussion and conclusions:* Students acknowledge PA as beneficial stress management option and as mood lifter, whereas employing it in their daily practices. It would be recommendable to additionally motivate students in this field, to equip them with practical and theoretical knowledge and to provide supportive circumstances for their regular PA in their educational surroundings.
Keywords: health care, education, adolescence, stress, physical activity

Introduction

The population of nursing students is nowadays greatly under the influence of stress. Nursing students experience high levels of stress during education due

to exam periods, clinical practice or any other sort of evaluation, and in relationships with their colleagues and professors (Drev, 2010).

Physical activity is one of the best known and proven ways to improve physical and mental health and an overall well-being of an individual (Brumby et al., 2011; Perales et al., 2014; Turk, 2015). To experience positive effects of physical activity it is recommended for nursing students to be moderately or vigorously physically active for at least 30 to 60 minutes per day (World Health Organization, 2010; Zach et al., 2012). The positive effects of physical activity are being noticed in physiological, psychological and sociological areas after only 20 minutes of exercise (Rendi et al., 2008; Dean, 2009; Sibinga et al., 2011; Dinger et al., 2014; Perales et al., 2014; Dolenc, 2015).

Share of physically active nursing students significally decreases in transition from high school to faculty. Sedentary way of life also carries an important role in lack of physical activity (Valois et al., 2008; Van Dyck et al., 2014; Vedrana et al., 2016).

Methods

The objective of our research was to find out what are nursing students' opinions about the effects of physical activity on stress management.

Data gathering methods and techniques

The research was based on descriptive non-experimental quantitative research method. Slovene and foreign references for the needs of theoretical and empirical background have been looked up in databases COBISS, CINAHL, PubMed, SpringerLink, MedLine and Health Source. Used keywords: health care, edud cation, adolescence, stress, physical activity.

Instrument

A structured questionnaire was employed online to its respondents. A survey was based on the references' check-up (Gojkovič, 2009; Preisinger, 2010; Cupar, 2012), and was structured in second complexes using closed questions and Likert's scales.

Sample

Research included a purposive sample of nursing students of full age of Secondary School of Nursing in Ljubljana and nursing students of Angela Boškin Faculty of Health Care in Jesenice, registrated in education year of 2016/2017 from March 2017 to May 2017. Sample was completed by 159 respondents, thereof 38,4 % were secondary school students and 61,6 % faculty students; 16,4 % male and 83,6 % female respondents.

Course of research and processing data

An online survey – 1KA was used for collecting opinions by nursing students. Software SPSS was used to statistically analyse data. We used univariate and bivariate data for analysis.

Results

Table 1 represents reasons for nursing students to implement physical activity. Students mostly decide for physical activity to reduce tension (M = 4,27; SO = 0,98). We did not confirm statistically significant differences between high school students and faculty students.

Table 1: Reasons to implement physical activity

Variable	*Group*						*Mann-Whitney test*	
	Together		*High school students*		*Faculty students*			
	M	*SD*	*M*	*SD*	*M*	*SD*	*z*	*p*
Reducing tension	4.27	0.98	4.32	0.90	4.24	1.04	- 0.339	0.734
Health and enjoyment	4.24	0.88	4.18	0.98	4.28	0.81	- 0.340	0.734
Body shaping	4.03	1.17	4.16	1.18	3.95	1.16	- 1.448	0.148
Reducing tension in educational environment	3.96	1.21	3.79	1.22	4.07	1.19	- 1.535	0.125
Developing skills	3.66	1.05	3.72	1.10	3.62	1.02	- 0.463	0.643
Fun	3.62	1.16	3.57	1.19	3.65	1.15	- 0.502	0.616
Hanging out with friends	3.59	1.26	3.52	1.29	3.63	1.24	- 0.609	0.543
Excitement	2.75	1.24	2.88	1.36	2.67	1.16	- 0.764	0.445
Competition	2.43	1.23	2.53	1.31	2.37	1.19	-0.637	0.524

M – arithmetic mean; SD – standard deviation; p – statistical characteristic; Likert scale: 1 – not true at all, 2 – not true, 3 – sometimes true, sometimes not true, 4- true, 5 always true

Table 2: Opinions about the effects of physical activity on stress management

Opinions	*Group*					
	Together		*High school students*		*Faculty students*	
	N	*%*	*N*	*%*	*N*	*%*
Yes	138	86.8	48	78.7	90	91.8
No	6	3.8	3	4.9	3	3.1
I don't know	15	9.4	10	16.4	5	5.1

N – number (absolute frequency), % – relative frequency in percents

Table 2 represents results of nursing students‘ opinions about the effects of physical activity on stress management. Implementing physical activity makes it easier to manage stress for 86.8 % respondents.

Table 3: Correlation between frequency of implementing physical activity and occurrence of stress symptoms

	Frequency of implementing physical activity		
Stress symptoms	*N*	r_s	*p*
Physical symptoms	159	- 0.155	0.051
Mental symptoms	159	- 0.174	0.029
Behavioural symptoms	159	- 0.193	0.015

r_s – Spearman's rank correlation coefficient; p – statistical characteristic; N – number

Correlation is weak but significantly important in reducing mental symptoms of stress (r_s = - 0,174, p = 0,029) and behavioural symptoms of stress (r_s = - 0,193, p = 0,015). The correlation in reducing physical symptoms is also negative, but a bit too weak to be statistically important (r_s = - 0,155, p = 0,051).

Discussion

Physical activity is highly ranked as a stress managing technique among nursing students. Respondents realise the effects of physical activity are positive. The research‘s findings show that the most nursing students manage stress easier by implementing physical activity, and only a few believe it is not so. Sirk (2013) and Rogač (2010) discovered similar results, that students frequently use physical activity to reduce stress in their lives.

By researching reasons to implement physical activity, we‘ve discovered that nursing students often choose physical activity to reduce tension. Gojkovič (2009) wrote, that students frequently use physical activity to manage stress, and a bit more seldomly for health and satisfaction. Cupar (2012) wrote that students frequently use physical activity for health and enjoyment, reducing pressure and for fun.

The main findings of the research reveal, that the frequency of exercising is statistically significantly related to the reduction of mental and behavioral symptoms of stress. Similar findings about positive effects on mental and behavioural symptoms have been explored by Gojkovič (2010), who wrote that high school students who are physically active don‘t have troubles with insomnia, concentrate on their work better, don‘t feel tense, solve their problems easier and have more confidence in themselves. Chatzitheodorou et al. (2007) proved, that moderate or vigorous physical activity positively effects on physical symptoms of stress.

Research's limitations are in the metrical instrument. The research itself and consequently its results are limited on subjective opinions of nursing students.

Conclusion

Nursing students receive a lot of theoretical knowledge about healthy lifestyle and acknowledge physical activity as beneficial stress management option. It would be recommendable to additionally motivate students in this field, to equip them with practical and theoretical knowledge and to provide supportive circumstances for their regular physical activity in their educational surroundings as well.

References

BRUMBY, S., CHANDRASEKARA, A., MCCOOMBE, S., TORRES, S., KREMER, P. and LEWANDOWSKI, P., 2011. Reducing psychological distress and obesity in Australian farmers by promoting physical activity. *BioMed Central Public Health,* vol. 11, no. 362, pp. 1-7.

CHATZITHEODOROU, D., KABITSIS, C., MALLIOU, P. And MOUGIOS, V., 2007. A pilot study of the effects of high-intensity aerobic exercise versus passive interventions on pain, disability, psychological strain, and serum cortisol concentrations in people with chronic low back pain. *Physical Therapy*, vol. 87, no. 3, pp. 304-312.

CUPAR, T., 2012. *Vključenost* športnih *aktivnosti v* življenjski *slog mladih:* diploma thesis. Maribor: Univerza v Mariboru, Filozofska fakulteta.

DEAN, E., 2009. Physical therapy in the 21st century (Part I): Toward practice informed by epidemiology and the crisis of lifestyle conditions. *Physiotherapy Theory and Practice,* vol. 25, no. 5-6, pp. 330-353.

DINGER, M.K., BRITTAIN, D.R. and HUTCHINSON, S.R., 2014. Associations between physical activity and health-related factors in a national sample of college students. *Journal of American College Health,* vol. 62, no. 1, pp. 67-74.

DOLENC, P., 2015. Stres in spoprijemanje s stresom v mladostništvu. *Revija za elementarno izobraževanje,* vol. 4, pp. 177-190.

DREV, A., 2010. *Odnos otrok in mladostnikov do gibanja: izsledki fokusnih skupin.* Ljubljana: Inštitut za varovanje zdravja Republike Slovenije.

GOJKOVIČ, A., 2009. *Vpliv ukvarjanja s telesno aktivnostjo na stres mladostnikov:* diploma thesis. Ljubljana: Univerza v Ljubljani, Fakulteta za šport.

PERALES, F., POCO-CRUZ, J., and POCO-CRUZ, B., 2014. Impact of physical activity on psychological distress: a prospective analysis of an Australian national sample. *American Journal of Public Health,* vol. 104, no. 12, pp. 91-97.

PREISINGER, U., 2010. *Stres pri* študiju*:* diploma thesis. Kranj: Univerza v Mariboru, Fakulteta za organizacijske vede.

RENDI, M., SZABO, A., SZABO, T., VELENCZEI, A. and KOVACS A., 2008. Acute psychological benefits of aerobic exercise: a field study into the effects of exercise characteristics. *Psychology, Health & Medicine*, vol. 13, no. 2, pp. 180-184.

SIBINGA, E.M.S., KERRIGAN, D., STEWART, M., JOHNSON, K., MAGYARI, T. and JONATHAN, M.E., 2011. Mindfulness-based stress reduction for urban youth. *The Journal of Alternative and Complementary Medicine,* vol. 7, no. 11, pp. 213-218.

SIRK, L., 2013. *Svetovalno delo z mladostniki pri pojavu stresa:* diploma thesis. Ljubljana: Univerza v Ljubljani, Fakulteta za socialno delo.

TURK, B., 2015. *Vpliv* športne *vadbe na zmanjševanje stresa na delovnem mestu:* diploma thesis. Maribor: Univerza v Mariboru, Pedagoška fakulteta.

VAN DYCK, D., DE BOURDEAUDHUIJ, I., DELIENS, T. and DEFORCHE, B., 2014. Can changes in psychosocial factors and residency explain the decrease in physical activity during the transition from high school to college or university? *International society of behavioural medicine,* vol. 22, pp. 178-186.

VALOIS, R.F., UMSTATTD, M.R., ZULLIG, K.J. and PAXTON, R.J., 2008. Physical activity behaviors and emotional self-efficacy: is there a relationship for adolescents? *Journal of School Health*, vol. 78, no. 6, pp. 321-327.

VEDRANA, S., STARC, G., JURAK, G., KOVAČ, M., GOLOBIČ, M., PAVLETIČ SAMARDŽIJA, P., GABRIJELČIČ, M., PRIMOŽIČ, M., KOTNIK, P., KOTAR, T. ET AL, 2016. *Poročilo o telesni dejavnosti otrok in mladostnikov v Sloveniji 2016.* Ljubljana: Fakulteta za šport.

WORLD HEALTH ORGANIZATION, 2010. *Global recommendations on physical activity for health.* Geneva: WHO Press.

ZACH, S., ZEEV, A., DUNSKY, A., GOLDBOURT, U., SHIMONY, T., GOLDSMITH, R. and NETZ Y., 2012. Adolescents' physical activity habits – results from a national health survey. *Blackwell Publishing Ltd,* vol. 39, no.1, pp. 103-108

Content of dental education and prevention in preschool children - an example of good practice

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Abstract

Presentation: Childhood is a period when children are highly dependent on adults. With growing up, this addiction is declining, but it is still high throughout the pre-school period. Adults are certainly those who can lead children on a healthy and way, where they will be able to build their own habits of life at a later stage of adolescence. Nurses also play an important role in this. As performers of dental education and prevention, they have more hearing for the child - their words are more memorable, they have more weight, and it is therefore important that children are enabled and presented their work. The article contains information on the meaning and contents of dental education and prevention in pre-school children. An example of good practice in the Health Center Velenje is presented, where nurses in oral health prevention and education continuously carry out training workshops in order to raise awareness about healthy habits and to train motor skills and thus to children clean teeth properly. In addition, we included in the literature review some scientific and professional articles dealing with the dental education of children in the pre-school age. *Purpose:* The purpose of this paper is to present an example of good practice in pre-school children in dental education and prevention in Health Center Velenje. *Findings:* Childhood is a critical period of acquiring new knowledge and habits that can later be reflected in behavior related to health (Abanto et al., 2011). In 1989, the World Health Organization supported the promotion of oral health as an integral part of health measures for all. In kindergartens, there are usually very good conditions for interventions that aim to promote healthy behavior and the development of children's autonomy. The nurse as a healthcare professional is responsible for promoting health measures in the pre-school environment (Carvalho et al., 2013).
Keywords: prevention, oral health, nurse in dental education and prevention, pre-school period

Introduction

An example of good practice

In Health Centre Velenje, nurses in dental education and prevention in kindergartens are included several times a year at intervals of at least one month. By doing so, we allow pre-school children to obtain appropriate hygiene habits that are important for maintaining health. In their active workshops, nurses use several accessories: dolls, stories, interactive games, large toothbrushes and toothpastes, posters and various tooth designs. All these devices, proven, can improve the purpose of the workshop, which is the improvement of oral hygiene (Gibbs et al., 2015; Johan et al., 2013). Each workshop then follows the active teeth brushing in groups of children. We will present workshops in the kindergarten by segments or topics that follow in a sequence.

First visit in kindergarten: Why do we need teeth?

With children in kindergartens, a nurse first observes her body (legs, fingers, hull, arms, head,...) and then compares all of these observations with children, and they continue with their friends and educators. Together we find out why there are such differences between us. Then we focus more on the head, the oral cavity and what is hidden in it. We focus on the teeth shown by the nurse on the model and talking about their meaning. It emphasizes the importance of proper nutrition (biting, chewing ...), proper speech and aesthetically pleasing appearance.

Second visit in kindergarten: Milk and permanent teeth and arrival of a tooth mouse

The nurse workshop starts with a story about the tooth mouse, followed by the observation of the mouth and teeth in them. Followed by practical observation on the body: With one hand we take the nose, we take the ear with the other hand. A finger that slides slowly toward the upper lip of our nose, we suggest that something is hidden underneath it and find out what it is. Then the finger on the lip slowly moves toward the hand, which is on the ears, and the teeth we touch under the lip. Then the nurse on the table prepares mirrors so that the children can look at their teeth-open their mouth wide and together we count how many teeth are in the mouth, and all this is recorded on the learning leaf. The model identifies the differences between milk and permanent teeth. We find out what kind of teeth adults have and why they are different.

Third visit in kindergarten: Healthy teeth - sick teeth

The nurse together with the children identifies and teaches how healthy teeth look and what kind of teeth they are when they get sick. Together we are talking about why teeth get sick and who is to blame for this to happen. This is illustrated by the pain of falling: children explain what they feel when they fall, they hit and cry because they hurt - we do not like pain. So we want to tell them

that toothache is a severe pain and that it is very important to prevent it. During the visit, children can also read a story related to the topic.

Fourth visit in kindergarten: How to prevent an early childhood caries?

The nurse talks with children about the importance of proper tooth washing and the correct choice of toothbrush and toothpaste. Teach them how to handle a toothbrush and what are the rules for dental washing that are extremely important for our safety. They talk about proper care of the toothbrush after the wash is finished. She also explains why it is also important that parents help them to wash their teeth and care for their health.

Fifth visit in kindergarten: The Importance of a Healthy Eating and Drinking Healthy Fluid.

The nurse with children discusses the importance of healthy eating and drinking water. In doing so, she can also help with the didactic device of the magnetic tablet of a food pyramid, on which children themselves install foods that are on magnets. Teach them - the smaller the field on the pyramid, the smaller quantity of foods from a particular field must be on the menu. Then, together with the educators, they cut some seasonal fruits and vegetables that are available and try together. We also discuss the importance of drinking water for our health, why we do not sweeten too often and only after the main meal. We also discuss why we avoid bubbles and, in the end, we also practically illustrate it. In the carbonated beverage we immerse the true tooth and in a month we observe the changes that have occurred on it.

Sixth visit in kindergarten: Dentist is not a Scarecrow, why we should be afraid?!

The nurse brings some instruments into the kindergarten, which are used in a dental clinic (mammal, mirror, probe, clamp ...). All these instruments children are allowed to hold and find out what it is done and why this dentist needs in their work. Together, they find out if sound or noise occurs when using. In the end, a real dental clinic, where dentist work, is followed by a visit. In this way, children does not develop fear of a dentist, but the visit is usually a real adventure for the child, who will be happy to remember.

Conclusion

The results obtained in the study reveal the acquisition of better oral hygiene in relation to brushing teeth in pre-school children, which proves the effectiveness of such oral health activities if children also have home parent support (Cooper et al., 2013). The study, which was conducted in Thailand with 3,706 children, assessed the usefulness of the program for the promotion of tooth health in kindergartens where children were brushed under expert supervision

with toothpaste with fluoride. After two years of follow-up, the results showed significant improvements in the results of dental plaques with up to 34% reduction in the incidence of caries (Petersen et al., 2015). Activities in kindergartens should also be adapted to the age of children. The study has shown that children aged 5 to 6 years have greater ability to properly clean teeth compared to children aged 3 and 4 years. This suggests that manual brushing ability with age is improving (Wambier et al., 2013). For better learning in children, it is important that oral nursing activities are not performed once but are repeated (Carvalho et al., 2013). Nurses play a key role in promoting the health of children and preventing the illness of pre-school children in kindergartens. Together with professional associates, they promote health education measures for the adoption of healthy lifestyles in the pre-school age. It is important that health promotion measures are also presented to parents who would encourage adequate oral hygiene at home as well. Parents of children play a very important role in preventing early caries. Without their help, all the efforts of a nurse are in vain.

References

ABANTO, J., CARVALHO, T.S., MENDES, F.M., WANDERLEY, M.T., BÖNECKER, M., and RAGGIO, D.P., 2011. Impact of oral diseases and disorders on oral health-related quality of life of preschool children. *Community Dent Oral Epidemiol*, vol. 39, no. 2, pp. 105–14.

COOPER, A.M., O'MALLEY, L.A., ELISON, S.N., ARMSTRONG, R., BURNSIDE, G., ADAIR, P., DUGDILL, L., and PINE, C., 2013. Primary school-based behavioural interventions for preventing caries. *Cochrane Database Syst Rev*, vol. 31, no. 5, pp. 10.

CARVALHO, T.H.L., SAMPAIO PINHEIRO N.M., SANTOS J.M.A., DANTAS COSTA L.E., QUEIROZ F.S., and BEZERRA CAVALCANTI NÓBREGA, C., 2013. Estratégias de promoção de saúde para crianças em idade pré-escolar do município de Patos-PB. Health promotion strategy for preschoolers in Patos, state of Paraiba. *Rev Odontol,* vol. 42, no. 6, pp. 426–431.

GIBBS, L., WATERS, E., CHRISTIAN, B., GOLD, L., YOUNG, D., and SILVA, A., 2015. Teeth tales: a community-based child oral health promotion trial with migrant families in Australia. *BMJ Open,* vol. 5, no. 6, pp. 21.

JAGODIC R., and PUCELJ V., eds. (2017). Zdrave navade predšolskih otrok. Priročnik za izvajalce vzgoje za zdravje v okviru primarnega zdravstvenega varstva. Nacionalni inštitut za javno zdravje, Ljubljana.

JOHN, B.,J., ASOKAN, S., and SHANKAR, S., 2013. Evaluation of different health education interventions among preschoolers: a randomized controlled pilot trial. *J Indian Soc Pedod Prev Dent*, vol. 31, no. 2, pp. 96–99.

MARKOČIČ TADIČ, I., ČOK, M., and PUCELJ, V., 2016. Vsakodnevna skrb za ustno zdravje. Usmeritve za izvajanje zobozdravstvene vzgoje in preven-

tive v okviru preventivnega zdravstvenega varstva na primarni ravni. Nacionalni inštitut za javno zdravje. Ljubljana, pp. 5–29.

PETERSEN, P.E., HUNSRISAKHUN, J., THEARMONTREE, A., PITHPORNCHAIYAKUL, S., HINTAO, J., JÜRGENSEN, N., and ELLWOOD, R.P., 2015. School-based intervention for improving the oral health of children in southern Thailand. *Community Dent Health*, vol. 32, no. 1, pp. 44–50.

SIGAUD, C.H.S., SANTOS, B.R.D., COSTA, P., and TORIYAMA, A.T.M., 2017. Promoting oral care in the preschool child: effects of a playful learning intervention. *Rev Bras Enferm*, vol. 70, no. 3, pp. 519–525.

WAMBIER, L.M., DIAS, G., BITTAR, P., POCHAPSKI, M.T., STADLER WAMBIER, D., RODRIGUES CHIBINSKI, A.C., and DOS SANTOS, A.F., 2013. The influence of tooth brushing supervision on the dental plaque index and toothbrush wear in preschool children. *Rev. Odontol*, vol. 42, no. 6, pp. 408–413.

Alcohol, and children and adolescents

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Abstract

Alcohol abuse has been one of the biggest public health problems in the world in the last 40 years. Slovenia has a "wet culture" where alcohol use is a significant component of (every) important life event. Childhood and adolescence are the most vulnerable periods for alcohol-related acute and long-term effects. The main target organ is the brain and the rest of the central nervous system and other organs also suffer from toxic effects of alcohol. Exposure to alcohol during childhood and adolescence increases the risk for addiction and other mental health disorders later in life. According to the Slovenian National Institute for Public Health data from the period between 2011 and 2015, roughly one half of hospitalizations for intoxication in adolescents aged 15–19 were due to alcohol (no gender differences) and about one third in children aged 10–14 (more boys). Medical doctors and other health professionals are responsible for creating safe and trustworthy atmosphere during the patients' visit, in which honest conversation is supported while preserving patients' dignity. To motivate the parents is extremely important when working with children and adolescents. A motivational interview helps to gain relevant history and results in a personalized treatment plan within treatment programme opportunities.
Key words: alcohol, children, adolescents, epidemiology, clinical work

Initial remark

The contribution contains an overview of important facts and challenges necessary for the understanding of the problems connected with alcohol consumption in children and adolescents. Special attention is paid to two levels: public health and individual or clinical levels.

An in-depth overview of current scientific knowledge is beyond the scope of this contribution.

Introduction

Alcohol abuse has been one of the biggest public health issues in the world in the last 40 years.

Slovenia has a "wet culture" where alcohol use is a significant component of (every) important life event. Alcohol-addicted patients sometimes say that everything is the reason for drinking and "if there is no reason for drinking, this is the reason for drinking". In their environment, children and adolescents are most probably faced with values tolerating alcohol consumption. The legal status of alcohol makes it a legal drug that is why it is connected with many dual messages, which also exerts influence on the formation of opinion of the young about alcohol.

In the World Health Organization (WHO) European Region (ER)[1], which also includes Slovenia, the greatest alcohol use in the world is recorded. Also problematic are the drinking habits, the greatest burden of the disease and mortality due to alcohol abuse as well as the number of deaths attributed to alcohol and healthy years of life lost (Rehm et al, 2009; Rehm and Imtiaz, 2016; WHO, 2009; WHO, 2014; OECD, 2016; Lovrečič and Lovrečič, 2013; Lovrečič and Lovrečič, 2013; Lovrečič, 2015). Slovenia ranks high among the EU countries and WHO ER countries regarding alcohol use as well as health problems due to alcohol abuse (Rehm et al, 2009; Rehm and Imtiaz, 2016; WHO, 2009; WHO, 2014; OECD, 2016; Lovrečič and Lovrečič, 2013; Lovrečič and Lovrečič, 2013; Lovrečič, 2015). Problematic drinking habits, great accessibility to alcohol and excessively tolerant attitude towards heavy drinking in society are recorded. According to data, most adult inhabitants of Slovenia drink alcohol within the limits of less risky drinking. In 2016, seven in ten inhabitants of Slovenia aged between 25 and 64 drank alcohol within the limits of less risky drinking, two abstained from alcohol in the previous year and one drank alcohol excessively[2]. Every second inhabitant of Slovenia was a high-risk drinker. Men abstain from alcohol less frequently, they drink more often and more heavily than women (Lovrečič in Lovrečič, 2018a). The problem of alcohol and its consequences is not present only among the adults, but it is also reflected among the adolescents who represent a vulnerable group due to their characteristics. Slovenian children and adolescents drink alcoholic drinks more often and are exposed to higher alcohol concentrations; they drink alcoholic drinks more often in comparison with a European average as well as an international average. Only very few young inhabitants of Slovenia do not have personal experience with alcohol (Lovrečič, 2014; Lovrečič, 2016; Rok-Simon, Lovrečič, Lovrečič, and Šarc, 2018).

1 It includes the EU countries, Norway and Switzerland.

2 In the survey, women who drank 10 g or more of pure alcohol daily and men who drank 20 g or more of pure alcohol daily were defined as heavy drinkers. Those who drank less than that were less risky drinkers. Abstainers are those who did not drink alcohol in the last year.

The (biological) vulnerability of children and teens

Childhood and adolescence are the most vulnerable periods for the effects and consequences of alcohol, primarily when ethanol concentrations are high. The main target organ is the brain and the toxic effect of alcohol also affects the central nervous system and depending on the concentration and exposure duration, it has short- and long-term effects. Children and adolescents exposed to alcohol represent an especially vulnerable group due to numerous physical, hormonal, biological and behavioural changes (Lovrečič, 2014; Lovrečič, 2016). Due to the characteristic developmental processes, primarily the maturation of the brain, adolescents are prone to riskier and more impulsive behaviour and at the same time, they have a drastically impaired ability to plan and predict the consequences and worse self-control compared to adults (Lovrečič, 2014; Lovrečič, 2016). Adolescents are also more susceptible to peer pressure (Lovrečič, 2014; Lovrečič, 2016). All these factors contribute to more frequent experimentation with alcohol and heavy drinking compared with adults and the risk for alcohol exposure increases in a society which is tolerant towards heavy drinking in public (Lovrečič, 2014; Lovrečič, 2016). Legally, Slovenia has banned selling and serving alcoholic drinks to adolescents, but in practice, adolescents have access to alcohol in some points of sale (shops and bars) (ZOPA, 2013; Mladinska zveza Brez izgovora, 2018). Children and adolescents often have their first experience with alcohol in their domestic environment (Boben-Bardutzky et al., 2010; Zalta et al., 2008; Kolšek, M., 2000). The first contact with alcohol (initiation) is also most frequent in adolescence, most Slovenian secondary-school students have already tasted alcohol and heavy drinking is most widespread among the young (Lovrečič et al., 2018; Lovrečič and Lovrečič, 2018b).

Studies have shown that for children and adolescents alcohol (as well as other drugs) is much more addictive for children than for adults. More than half of the persons who encounter alcohol before their physical and psychological development is over become addicted to alcohol in their lives, which holds true for only one tenth of the persons who first encounter alcohol in their adulthood (Anthony and Echeagaray-Wagner, 2000).

Exposure to alcohol in childhood and adolescence represents a risk for troubles later in life, it can lead to alcohol dependence syndrome or the development of other mental disorders (Lovrečič, 2014; Lovrečič, 2016). Childhood and adolescence are vital for the adoption and development of behavioural patterns including those that refer to lifestyle and alcohol consumption patterns (Lovrečič, 2014; Lovrečič, 2016). Alcohol dependence syndrome is a process that can begin in childhood and adolescence. The risk for the development of alcohol dependence syndrome is a result of the intertwinement of several factors and the risk for mental health disorders due to alcohol exposure is linked to the age of exposure: the earlier a child or adolescent is exposed, the greater the risks for problems later in life (Lovrečič, 2014; Lovrečič, 2016).

Exposure of adolescents to alcohol represents a public health problem, a financial and health burden and can lead to hospitalization and death due to alcohol intoxication. All this is a tip rather than the iceberg (Rok-Simon, Lovrečič, Lovrečič, and Šarc, 2018).

The National Institute for Public Health data show that among the intoxications by drugs and non-medical substances alcohol intoxication was the most common reason in Slovenia for hospitalization of adolescents aged 15–19 in the period between 2011 and 2015. In more than half of the intoxications, alcohol was the reason for hospitalization. No statistically significant difference between the sexes was recorded in the degree of hospitalization. Regarding the location of intoxication, adolescents were most frequently intoxicated by alcohol in residential areas outside their home (39%), at school (6%) and on the street or in a public park (6%). Similar observations were recorded in older schoolchildren (aged 10–14) who were most frequently hospitalized due to alcohol intoxication (almost one third of all intoxications). Among them, boys had a statistically higher level of hospitalizations compared with girls. They were most frequently intoxicated by alcohol in residential areas outside their home (93%) and on the street (12%). The National Institute for Public Health data show that in the period between 2015 and 2017, alcohol intoxication was the reason for 330 hospitalizations of adolescents (aged 15–19) and 64 hospitalizations of children (aged 10–14) (Lovrečič and Lovrečič, 2018).

How to talk about alcohol in the clinical practice

Doctors and other health staff are obliged to help our patients to talk about the problems they are facing and to enable them to answer our questions in a way that makes diagnostic procedures and the planning of suitable treatment easier. It is expected that our patients trust us, since we are the doctors who want to help them. Mostly, our patients do trust us. When the content is connected with feelings of shame, guilt or is stigmatized, the patients need more help from the doctor to create the conditions for safe and confidential communication. Here, the technique of conversation based on a motivational interview (Miller and Rollnick, 2013) helps us and saves us time. Such a conversation is aimed at strengthening self-efficacy of the patient, it is empathic and accepting. At the same time, it makes it possible for the doctor to express dissatisfaction with inacceptable behaviour (such as alcohol consumption) in a respectful way and by maintaining the patient's dignity.

The doctor should check which information about alcohol consumption the patients know and supplement it. The conversation is also an opportunity to explore beliefs and opinions and possibly also myths about alcohol.

It is also important for the parents to cooperate. A child's or adolescent's alcohol consumption is often a symptom of problems in the family. Clinical practice has shown that parents who themselves experienced problems with mental health or alcohol consumption and had positive experience with the

treatment cooperate well in dealing with the problems of their children; therefore, the prognosis is more favourable. In some cases, parents represent an obstacle to the treatment of their children at the beginning and in such cases, we also need to improve the parents' motivation for a change.

In children and adolescents, alcohol consumption can be a symptom of another mental disorder typical of childhood and adolescence, such as mood disorders (depression, anxiety) or attention disorder. A suitable treatment of mental disorders has a favourable outcome only on condition that alcohol use is also addressed. Unfortunately, the latter frequently remains untreated and consequently, the treatment of other disorders is longer and less effective (Stahl, 2013).

When agreeing on the changes (or therapeutic measures), we check for each of them whether and to what an extent (on a scale from 0 to 10) our young patient assesses that the change (such as giving up alcohol) is important, that it is feasible and that he/she is prepared to invest a great effort into making the change.

Conclusions: Measures to be taken for a reduction in damage made by alcohol among the adolescents

Instead of a conclusion, we summarize evidence-supported measures for a reduction in damage by alcohol among the young.

As measures that have proved to be effective in reducing damage by alcohol, the World Health Organization emphasizes measures aimed at the limitation of access for adolescents in particular, e.g., banning the sale of alcohol to underage people, the determination of minimal age for the purchase of alcohol, licensing, and generally the measures that include road safety (e.g., limitation or zero blood alcohol concentration for all drivers, regular random testing of drivers), price and tax measures (price policy of alcohol, taxes and excise duties), early recognition (screening) of risky alcohol consumption or alcohol dependence syndrome and adapted measures (short counselling, short interventions, directing towards specialist treatment), treatment of conditions and consequences of alcohol abuse (WHO, 2009; WHO, 2012).

From the aspect of public health measures aimed at the population, legal and economic measures have the best and most long-term effects, but they need to be implemented and carried out in practice to the letter (the example being the ban on the sale of alcohol to adolescents) (WHO, 2009; WHO, 2012; McKnight-Eily et al, 2017). From the aspect of an individual, especially in the case of most vulnerable subgroups, it is essential that systemic measures be upgraded and that effective programmes that have proved to be effective and are adapted to the needs be carried at various levels and in various environments (local environment, family, school, health system). A challenge in the field of prevention of consequences due to alcohol exposure is also represented by the implementation of standardized screening programmes for the detection of

exposure to alcohol, short counselling or interventions (WHO, 2009; WHO, 2012; McKnight-Eily et al, 2017).

References

ANTHONY, J.C., ECHEAGARAY-WAGNER, F., 2000. Epidemiologic analysis of alcohol and tobacco use. Alcohol Res Health;24(4):201-8

BOBEN-BARDUTZKY, D., BOBEN, D., ČEBAŠEK-TRAVNIK, Z., LEVAČIČ, M., SORKO, N., ZORKO, M., 2010. Pot v odraslost - z ali brez alkohola; rezultati raziskave o odnosu srednješolcev do alkohola. Ljubljana: Društvo Žarek upanja.

KOLŠEK, M., 2000. Pogostost pitja in pivske navade osnovnošolcev v Sloveniji: doktorska disertacija. Ljubljana: Medicinska fakulteta.

LOVREČIČ, B., 2014. Možgani mladostnikov in alkohol. Isis, 23(7): 16-8.

LOVREČIČ, B., 2015. Slovenci in alkohol. ISIS 2015; 8-9: 50-53.

LOVREČIČ, B., 2016. Ranljivosti mladostnikov in razvoj zasvojenosti: od genov do dozorevanja možganov. Isis, 25(7): 29-33.

LOVREČIČ, B., LOVREČIČ, M., 2013. Poraba alkohola in pivske navade v obdobju 2000-2010: primerjava med EU in Slovenijo. ISIS; 22: 70-5.

LOVREČIČ, B., LOVREČIČ, M., 2018a. Pitje alkohola. In: VINKO, M., KOFOL BRIC, T.,

KOROŠEC, A., TOMŠI?, S., VRDELJA, M., Eds. Kako skrbimo za zdravje? Z zdravjem povezan vedenjski slog prebivalcev Slovenije 2016. Ljubljana; NIJZ, pp. 17-20. Accessed 4 January 2019: http://www.nijz.si/sl/publikacije/kako-skrbimo-za- zdravje

LOVREČIČ, B., LOVREČIČ, M., Eds., 2018b. Poraba alkohola in zdravstveni kazalniki tvegane in škodljive rabe alkohola: Slovenija, 2016. Ljubljana: Nacionalni inštitut za javno zdravje. http://www.nijz.si/sl/publikacije/poraba-alkohola-in-zdravstveni- kazalniki-tvegane-n-skodljive-rabe-alkohola-slovenija-1

LOVREČIČ, B., LOVREČIČ, M., ROK-SIMON, M. 2018. Zastrupitve z alkoholom pri ranljivi skupini otrok in mladostnikov: dejstva in izzivi. In: BELOVI? B, Ed. Alkohol in rak. Ljubljana: Zveza slovenskih društev za boj proti raku, pp. 70-77

LOVREČIČ, B., LOVREČIČ, M., VARDIČ, D., ZUPANIČ T., 2018. Raba alkohola. Zdravstveni statisti?ni letopis, 2016. Accessed 9 September 2018: http://www.nijz.si/sites/www.nijz.si/files/uploaded/publikacije/letopisi/2016/zdravstvenistatisticniletopis_2016.pdf.

LOVREČIČ, M., LOVREČIČ, B., 2013. Umrljivost in hospitalizacije zaradi alkoholu neposredno pripisljivih vzrokov v Sloveniji v obdobju od leta 2000 do 2010. Isis; 22(4): 60-5.

MCKNIGHT-EILY, L.R., HENLEY, S.J., GREEN, P.P., ODOM, E.C., HUNGERFORD, D.W., 2017. Alcohol Screening and Brief Intervention: A Potential Role in Cancer Prevention for Young Adults. American journal of preventive medicine; 53(3 Suppl 1):S55-S62.

MILLER, W.R., ROLLNICK, S., 2013. Motivational interviewing: helping people change. 3rd edition. New York, NY: Guilford Press.

MLADINSKA ZVEZA BREZ IZGOVORA, SLOVENIJA, 2018. Novinarska konferenca: brezbrižnost gostincev in trgovcev glede prodaje alkohola mladoletnim. Accessed 9 September 2018: http://www.noexcuse.si/aktualno/novinarska-konferenca- brezbriznost-gostincev-in-trgovcev-glede-prodaje-alkohola-mladoletnim-news

OECD, 2016. Alcohol consumption among adults. In: Health at a Glance: Europe 2016: State of Health in the EU Cycle. Paris: OECD Publishing. Accessed 7 December 2018: https://doi.org/10.1787/health_glance_eur-2016-24-en

REHM, J., IMTIAZ, S., 2016 A narrative review of alcohol consumption as a risk factor for global burden of disease. Substance Abuse Treatment, Prevention and Policy, 11:37.

REHM, J., MATHERS, C., POPOVA, S., THAVORNCHAROENSAP, M., TEERAWATTANANON, Y., PATRA, J., 2009. Global burden of disease and injury and economic cost attributable to alcohol use and alcohol use disorders. Lancet, 373: 2223-33.

ROK-SIMON, M., LOVREČIČ, M., LOVREČIČ, B., ŠARC, L., 2018. Zastrupitve. In: ROK-SIMON, M., Ed. Poškodbe otrok in mladostnikov - problem tudi v Sloveniji. Ljubljana: Nacionalni inštitut za javno zdravje, pp. 106-122. Accessed 9 January 2019: http://www.nijz.si/sites/www.nijz.si/files/publikacije-datoteke/poskodbe_otrok_2018_publikacija_koncna_1.pdf.

STAHL, S.M., 2013. Stahl's essential psychopharmacology: Neuroscientific basis and practical applications (4th ed.). New York, NY, US: Cambridge University Press

WORLD HEALTH ORGANIZATION, 2009. Evidence for the effectiveness and cost-effectiveness of interventions to reduce alcohol-related harm. Copenhagen: WHO Regional Office for Europe. Accessed 5 Avgust 2018: http://www.euro.who.int/__data/assets/pdf_file/0020/43319/E92823.pdf

WORLD HEALTH ORGANIZATION, 2009. Global health risks: Mortality and Burden of Disease Attributable to Selected Major Risks. Geneva: World Health Organization.

WORLD HEALTH ORGANIZATION, 2014. Global status report on alcohol and health. Geneva: World Health Organization.

WORLD HEALTH ORGANIZATION, REGIONAL OFFICE FOR EUROPE, 2012. European action plan to reduce the harmful use of alcohol 2012-

2020. Copenhagen: World Health Organization, Regional Office for Europe.

Zakon o omejevanju porabe alkohola (ZOPA). Uradni list RS, št. 15/2003.

ZALTA, A., KRALJ, A., ZURC, J., LENARČIČ, B., MEDARIČ, Z., SIMČIČ, B., 2008. Mladi in alkohol v Sloveniji. Koper: Univerza na Primorskem, Znanstveno-raziskovalno središ?e Koper. Accessed 9 September 2018http://csg.zrs.upr.si/media/uploads/files/Mladi%20in%20alkohol%20v%20Sloveniji.pdf

The effects of therapeutic camps for children and youth with disabilities

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Abstract

Introduction: Therapeutic camps are conducted to foster the physical and psychosocial development of children and youth with a wide range of disabilities. The camps have been designed for a variety of purposes. *Methods:* The descriptive research method with a critical review of Slovene and English professional and scientific literature was used. The review was restricted to studies published since 2009 to 2019. Bibliographic databases CINAHL, Medline and ScienceDirect have been searched. *Results:* The activities are therapeutic as well as enjoyable, which has an effect on mental and physical well-being and encourages social skill development. The camps provide to the children and youth a unique opportunity to socialise, expand their social networks, and develop a sense of belongingness. A safe environment provides new experience, encourages their independence, and enables them to effectively combat the stigma. *Discussion and conclusions:* Therapeutic camps are extremely beneficial since they target the specific needs and challenges facing the daily existence of children with disabilities. All the activities are adapted to the needs of the participants, including outdoor activities, activities of daily living, while special emphasis is placed on the instruction in appropriate relaxation techniques, coexistence and self-care. The activities promote a sense of belongingness since the participants are integrated into a group of individuals whose members face similar daily challenges.

Key words: therapeutic camps, disabilities, children, youth, psychosocial development

Introduction

Disability is defined by The International Classification of Functioning, Disability and Health as an umbrella term for impairments, activity limitations and

participation restrictions. Over a billion people are estimated to live with some form of disability. Disability is extremely diverse. While some health conditions associated with disability result in poor health and extensive health care needs, others do not (WHO - World health organization, 2018). Child with a disability is every evaluated child who is having mental retardation, a hearing impairment (including deafness), a speech or language impairment, a visual impairment (including blindness), a serious emotional disturbance, an orthopedic impairment, autism, traumatic brain injury, other health impairment, a specific learning disability, deaf-blindness, or multiple disabilities, and who, by reason thereof, needs special education and related services (Idea Partnership, 2004). Disability can severely impact upon the lives of children or youth, especially on their physical and psychosocial development. In addition, these young people are often faced with functional disabilities and social difficulties. Because of that they need special skills to cope with the physical and mental challenges associated with their disabilities. Therapeutic camps can offer an opportunity to build these skills (Kornhaber et al., 2019) and are designed for children and youth with different learning disabilities, psychosocial problems, chronic illness, autism, traumatic loss, depression, anxiety and other health-related problems (Harper, 2017). The purpose of these camps is to provide an environment for children and youth with disabilities to meet with their peers, develop self-confidence and a sense of identity, increase independence, grow new friendships and improve their support networks. Consequently, these benefits may potentially foster the adjustment on the disability and improve the quality of life (Kornhabler et al., 2019). The purpose of this paper is to present positive effects of attending therapeutic camps for children and youth with disability and also for their parents or caregivers.

Methods

A descriptive research method with a critical review of Slovene and English professional and scientific literature was used. We searched through bibliographic databases CINAHL, Medline and ScienceDirect and conducted a meta-synthesis. Inclusion criteria were studies published between 2009 and 2019 (except one article was published 2004), Slovene or English language and correspondingly content (focus on the actual effects of therapeutic camps). Keywords in Slovene were: terapevtski tabori, motnje v razvoju, otroci, mladostniki and psihosocialni razvoj. Keywords in English were: therapeutic camps, disabilities, children, youth and psychosocial development. We used operator AND. According to keywords we found 11 scientific articles, 4 of them were excluded because they did not match our inclusion criteria. The literature search took place from April to June 2019.

Results

Seven studies were obtained that show the effect of therapeutic camps for children and youth, their parents or caregivers (Table 1).

Table 1: Overview of studies

Author/year	*Purpose of research*	*Methodology*	*Results*
Dawson et al., 2018	To explore the impact of camp participation on enhancing reciprocal relationships among children and adolescents.	Pre and post camp, semi-structured, open-ended interviews.	Enhancement of social networks for youth with physical disabilities during camp experience (improvement of friendships and other support connections).
Devine et al., 2015	To examine the relationship between social acceptance and health-related quality of life for youth attending a residential summer camp.	Nonexperimental, pre/post and a 10-week follow-up design.	Disability specific residential camps may have an impact on social acceptance and perceived health related quality of life.
Harper, 2017	To identify and articulate the extant literature of outdoor adventure programs and approaches found in child and youth care literature.	A scoping review.	Therapeutic camps are underrepresented in the literature, underappreciated in practice and require specific training and research.
Javalkar et al., 2017	To determine child-related predictors and risk factors for caregiver burden among parents of children with chronic conditions.	Cross-sectional survey.	Children's number of medicines, injections and a diagnosis of ADHD, frequent PCP and ER visits and lower child self-efficacy are predictors of increased caregiver burden.
Kornhaber et al., 2019	To examine the effect of burn camps on the psychosocial wellbeing of child burn survivors.	A systematic review.	Burn camps are beneficial for children with burn injuries (improving psychosocial outcomes among the camp participants, specifically in terms of improved confidence and social skills).
Moola et al., 2013	Assessment of the psychosocial impact of camp for children with chronic illnesses.	A systematic review of literature.	Possibility of potential use of camps as psychosocial intervention in pediatrics.
White et al., 2016	To examine how a camp for children with CHD impacts parental psychosocial well-being.	Pre and post camp, semi-structured, open-ended interviews.	Parents perceived that camps improve the independence of their children and on the other hand they are less protective to them, relieved, distressed and have the opportunity to spend time with partners, other children and friends.

Different therapeutic recreation camps have been considered as effective environment for improving psychosocial well-being of children with disabil-

ities as they improve confidence, self-esteem, social and coping skills (White et al., 2016) and offer unique therapeutic experiences, where children interact with each other and have the opportunity to connect and bond with youth who have similar disability-related conditions and are going through similar life experiences (Devine et al., 2015). This camps offer a holistic approach (Harper, 2017) and are some kind of therapeutic landscape, where camp attendees are in a safe, inclusive and supportive environment, they can participate in free and unrestricted activities, acquire new skills, socialize with their peers, they can attend a lot of challenging activities such as horse riding, scuba diving, wall climbing, rope challenges, water sports, making arts and crafts, musical workshops, team activities in a multi-sport complex and so on. Consequently these children gain a sense of belonging and acceptance and they see their participation in such camps as a joyful experience with new friends and good memories (White et al., 2016). Adjusting the medical camp program to create an environment that fosters meaningful friendships for participants may have tremendous positive therapeutic and quality of life outcomes. Camp may accelerate relationships during the residential experience, yet provide little if any methods to access these newly formed social network relationships upon return to home communities, on the other hand such camps may also be an opportunity to establish family to family connections as well as friendship connections that last throughout the year (Dawson et al., 2018). Consequently therapeutic camps are not beneficial just for children but also for their parents, because after their children attend this sort of camps, parents let them be more independent and are less protective to their child (White et al., 2016). Parents of children with any kind of disabilities often experience guilt, anxiety, maternal distress, depression, bad sleeping schedule and reduced quality of life (Javalkar et al., 2017; White et al., 2016), also their burdens are higher (Javalkar et al., 2017). But after their children attended camps the parents felt more relieved from daily demands and stressors and during camp, levels of depression, anxiety and maternal distress significantly reduced. This camps enabled parents to relax, take time for themselves and interact with friends, other family members, partners and children (White et al., 2016; Harper, 2017; Kornhabler et al., 2019). The fact that the children with the most serious chronic illnesses who would arguably need to attend a therapeutic camp more than other children may not be able to participate because of their health condition it's still a great issue. Whether children who also face socio-economic deprivation and cultural and ethnic barriers to health care are being targeted by camp programmers and clinicians, remains unknown. Clinicians and camp programmers need to make a concerted effort to develop medical thresholds for safe participation at camp, and purposefully engage and include this more compromised sector of the clinical population into camp programming. It's important to ensure the participation of the patients who are most in need of camp attendance and are more likely to reap the psychosocial benefits (Moola et al., 2013). Therapeutic camps mostly last 1 week and it may not be likely nor reasonable to expect long-term benefits without adopting different approaches toward the design and delivery of camp.

In the effort to attain long-term positive psychological change in the functioning and well-being of children with chronic diseases, delivering and reinforcing the same, consistent 'camp philosophy' (inclusion, participation, self-esteem, mastery and independence) to patients during their routine clinic visits to hospital throughout the year and inpatient stays, may be a feasible way to reinforce the lessons learned from camp and derive long-term positive psychosocial change. For instance, if camp programmers and hospital clinicians broaden the purview of camp, lessons that reinforce the camp philosophy could be routinely delivered during regular clinic visits and inpatient hospitalizations (Moola et al., 2013).

Discussion

Children and youth, parents and staff perceive benefits from camp attendance, including companionship and belonging (Kornhaber et al., 2019). It is positive, because children and youth in that camps are well supervised and they have all the medical support needed. The children and youth after the camp take more care of themselves, are more independent and have fun at the same time, they are feeling braver and not like an outcast because through the camp they get to know more peers with the same disabilities (White et al., 2016). Camps also fosters independence, inspires confidence, builds self-esteem and enriches the lives of children with serious disabilities (Victory Junction, 2019). Therapeutic camps provide children or youth and their caregivers a sense of empowerment as they offer an environment to unite, support and empower one another. For all the children and youth the camps are represents a safe environment where they feel accepted (Kornhabler et al., 2019). Camps offer the chance to learn independent living, communication, and social interaction skills as well as to improve health-related quality of life (Devine et al., 2015). Therapeutic camp philosophy could also be useful for pediatric patients during their treatment due to its positive psychosocial effect (Moola et al., 2013).

Conclusion

Therapeutic camps have been considered as effective environment for improving psychosocial well-being of children and youth with disabilities. They target the specific needs and challenges facing the daily existence of children and youth through the improvement of confidence, self-esteem, social and coping skills. Children and youth with disabilities benefit from the participation in therapeutic camps. They experience different social situations and are performing daily tasks in a safe, inclusive and supportive environment. This environment is encouraging because camp attendees can participate in free and unrestricted activities, socialise with their peers, they can attend different sports, making arts and crafts, musical workshops, team activities and more. The effects of therapeutic camps are positive also for parents and caregivers of camp attendees because it improves independence of the children, reduces stress for

parents and children or youth and has an overall positive influence on the psychological state of the whole family.

References

DAWSON, S., MCCORMICK, B. and LI, J., 2018. A network analysis of youth with physical disabilities attending a therapeutic camp. *Therapeutic Recreation Journal*, vol. 52, no. 2, pp. 154-169.

DEVINE, M.A., PIATT, J. and DAWSON, S.L., 2015. The role of a disability-specific camp in promoting social acceptance and quality of life for youth with hearing impairments. *Therapeutic Recreation Journal*, vol. 49, no. 4, pp. 293-309.

HARPER, N.J., 2017. Wilderness therapy, therapeutic camping and adventure education in child and youth care literature: a scoping review. *Children and Youth Services Review*, vol. 83, pp. 68-79.

IDEA PARTNERSHIP, 2004. Definition of child with a disability: part B (ages 6 through 21) [online]. [viewed 25 June 2019]. Available from: http://www.ideapartnership.org/topics-database/idea-2004/idea-2004-part-b/1396-definition-of-child-with-a-disability.html

JAVALKAR, K., RAK, E., PHILLIPS, A., HABERMAN, C., FERRIS, M. and VAN TILBURG, M., 2017. Predictors of caregiver burden among mothers of children with chronic conditions. *Children*, vol. 4, no. 5, pp. 39-48.

KORNHABER, R., VISENTIN, D., THAPA, D.K., WEST, S., HAIK, J. and CLEARY M., 2019. Burn camps for burns survivors - realising the benefits for early adjustment: a systematic review. *Burns*, vol. , no. , pp. 1-11.

MOOLA, F.J., FAULKNER, G.E.J, WHITE L. and KIRSH, J.A., 2013. The psychological and social impact of camp for children with chronic illnesses: a systematic review update. *Child*: *care, health and development*, vol. 40, no. 5, pp.615-631.

VICTORY JUNCTION, 2019. About us [online]. [viewed 26 June 2019]. Available from: https://victoryjunction.org/about/

WHITE, L.C., MOOLA, F.J., KIRSH, J.A. and FAULKNER, G.E.J., 2016. A therapeutic recreation camp for children with congenital heart disease: examining impact on the psychosocial well-being of parents. *Journal of Child and Family Studies*, vol. 25, no. 10, pp. 3034-43.

WHO - WORLD HEALTH ORGANIZATION, 2018. Disability and health [online]. [viewed 26 June 2019]. Available from: https://www.who.int/en/news-room/fact-sheets/detail/disability-and-health

Why (not to) ignore the role of fathers? Insights from the European context

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Abstract

Introduction: In most European countries, the social structure has changed substantially during the last decades. In several countries, however, the role of fathers has not changed accordingly. The lack of appropriate solutions for fathers in several European contexts and the objective difficulties to recognize the role of fathers at an institutional level is in the end penalising both their children and those mothers that are looking for better opportunities and more visibility in the contemporary job market. Such an issue is persistent in Italy, particularly when parents separate or ask formally for child custody. *Methods:* The aim of this contribution is to shed light on the need for enhancing an appropriate recognition of the essential role of fathers' involvement in the life and education of children. To achieve this, the author provides a literature review of the studies on this topic; on the other hand, some relevant case studies are discussed. *Discussion and conclusions:* This contribution finds that equal opportunities for fathers are still difficult to achieve in practice in countries such as Italy. We are experiencing a paradoxical situation: policies for a better recognition of women in different aspects of social life including work are not matched by appropriate solutions for a better involvement of fathers in family life. Should the lack of such solutions persist in the coming years, children would continue to be in a position of disadvantage. This should be prevented.

Keywords: fathers' involvement; child development; social change; ECHR; case studies.

Introduction

Social structures in most European countries have changed with women enjoying higher possibilities to access the university (as showed by gender dy-

namics in some top universities – see: Study International Staff, 2018), participate in the labour force and plan their professional careers. On the other hand, these changes have not been always matched by active policies of integration of fathers in family life, even though fathers should be viewed as complementary to mothers in children's psychosocial development. In countries such as Italy, mainstream policies are still considering the mother as the leading figure for children, while the father and grandparents are often relegated to a second best position due to cultural or ideological reasons, which are nevertheless persistent in Italy (Del Boca and Pasqua, 2010).

Children can benefit substantially from the presence of their fathers, particularly during their first years of life (Tamburlini, 2014). The lack of appropriate practical solutions for fathers in Italy and in other European contexts, and the objective difficulties to recognize the role of fathers at an institutional level, are in the end penalising both their children and those mothers who are looking for better opportunities and more visibility in the contemporary job market. Such an issue is persistent in Italy, particularly when parents separate or ask formally for child custody (Guidorzi, 2017).

By providing a substantial literature review, the present contribution aims to recognize the role that fathers can play in the everyday life of their children. At the same time, it shows that reality is often quite different, as it emerges from a number of case studies that are discussed in the second part. Insights contained in the present contribution should be of interest to policy makers in family & health policies, social workers and experts in family law, as well as to those interested in securing children's well-being in contemporary societies.

Literature review

The literature review is informed by the following question: *what does contemporary research tell us about the changing role of fathers in family life and their involvement in the life of their children in the so-called advanced societies?* By reviewing a number of relevant studies, Sarkadi et al. (2007) find that there is evidence in support of the positive influence of father engagement on offspring social, behavioural and psychological outcomes. Similarly, Lamb and Tamis-Lemonda (2004) observe that fathers influence their children directly through their behaviour and the attitudes and messages they convey.

Ryan et al. (2006) investigate parenting patterns among low-income couples and their impact on children's cognitive outcomes: they find that children with supportive parents have on average higher results in mental development indexes compared to children with non-supportive parents. They also find that, in this sense, children benefit from having at least one supportive parent, regardless of parent gender. They conclude that studies on parenting and child development should ideally investigate mother and father behaviour in concert.

Martin et al. (2010) study the outcomes of fathers' supportiveness in terms of children's school readiness. Based on results obtained through the analysis of data from the NICHD Study of Early Child Care and Youth Development comprising 720 samples, they find that fathers influence child development primarily as a buffer against unsupportive mother parenting. Indeed, empirical results from both academic and social outcomes indicate that fathers' supportiveness has larger benefits for children at lower levels of mothers' supportiveness.

Finally, in the past, some studies (e.g. MacDonald and Parke, 1984) found that paternal physical play, engagement, and maternal verbal behaviour were positively related to children's peer relations. Similar results have been obtained by McDowell and Parke (2009) who find that parent-child interaction, parent advice sharing, and parental provision of opportunities by mothers and fathers predict children's social competence as well as better social acceptance 1 year later.

Case studies

In this section, the difficult situation of some Italian fathers is documented with reference to four case studies.

The first example refers to the story of Mr. Poloniato, a father of two children who describes his experience and criticizes the low level of competence of social workers, resulting in failing at putting children at the centre of their work, as well as the lack of ethics among lawyers who seem to be often safeguarding their business rather than securing the best interest of children (Poloniato, 2014). He recently argued that the Italian authorities are still unable to properly recognize a number of important social changes in Italy (for instance the caring and more active role of fathers in family life compared to past standards) and are unable to adapt their policies accordingly (Poloniato, 2017).

The second example refers to the case of Bondavalli v. Italy (ECHR Application nr. 35532/12) in which regard the European Court of Human Rights (ECHR) recognized that there had been a violation of Article 8 of the European Convention on Human Rights (the right to respect for private life and family life). Specifically, the ECHR observed that from September 2009 onwards, the applicant was not able to fully exercise his rights as a parent, but only in a limited way, for two main reasons; first, due to negative reports of the social services, which were part of the same administrative entity as that in which the child's mother worked as a psychiatrist; secondly, due to a report by a professional psychiatrist who completed his end-of-studies internship with the child's mother. Among other things, the expert's report suggested that Mr. Bondavalli showed signs of a paranoia-type delusional disorder, while later on other experts' reports showed the opposite – namely, the lack of personality disorders.

The Italian authorities did not take into account these and other aspects which did not grant any objectivity to the assessments, thereby penalising Mr.

Bondavalli. Furthermore, the ECHR declared that the Italian courts had not taken adequate measures to favour the conditions for Mr. Bondavalli to fully exercise his right of contact with his son. Subsequently, the best interest of the child was not granted either. The ECHR sentenced that Italy was to pay Mr Bondavalli 10,000 euros in respect of non-pecuniary damage and 15,000 euros with respect to costs and expenses.

The third example refers to the case Giorgioni v. Italy (ECHR Application nr. 43299/12) in which the ECHR recognized that there had been a violation of Article 8 of the European Convention on Human Rights (right to respect for family life). In particular, the ECHR noted that the Italian courts had not taken appropriate measures to ensure that Mr. Giorgioni could exercise fully his contact rights with regards to his son despite a conflictual situation with the child's mother.

In 2008, the domestic court in Italy granted the parents joint custody of the child, urged them to cooperate with each other, and decided that the child should live with his mother. In April 2010, the court took notice of the mother's lack of cooperation with the social services and granted the father visiting and staying contact rights albeit under supervision of the social services. Despite the court's orders, the woman continued to oppose any meeting between the father and their child in her absence. As a result, in November 2010 the applicant informed the social services he no longer wanted any meetings.

In this case, the ECHR sentenced that the lack of cooperation between the parents did not exempt the Italian authorities from pursuing everything in their power to secure that a family bond was kept alive. The domestic courts failed in taking adequate measures at the onset of the parents' separation to enable optimal contact arrangements to be put in place. On this basis, the ECHR concluded that there had been a violation of the respect for family life. It held that the violation was itself sufficient for any non-pecuniary damage sustained, and that Italy was to pay Mr. Giorgioni 10,000 euros with respect to costs and expenses.

A similar case is that of Strumia v. Italy (ECHR Application nr. 53377/13), showing Mr. Sturmia's inability to exercise his contact rights with his child under the conditions set by the domestic courts. In 2007, the applicant's wife left the marital home with the couple's daughter (3 years old at that time). In May 2007 the women applied to the Italian Youth Court alleging ill-treatment by her father and demanding that urgent measures be taken. Mr. Sturmia, who had been unable to exercise his contact rights, asked that visits be arranged in a protected setting. Even though the court in Italy decided for meetings between the applicant and his daughter in a protected setting, the order was never complied due to the objections of the mother.

On November 2010, the domestic court placed the child in the care of social services with her mother's home as main residence. Only four years later (2014) it ordered social services to take all the necessary measures to secure the

child's best interest, including removing her from the mother's home if necessary.

Mr. Sturmia complained that he had been unable to fully exercise his contact rights for several years, despite the Italian court orders that should have helped to set the conditions to effectively secure the above mentioned right. The ECHR observed that there had been a violation of Article 8 of the European Convention on Human Rights, and sentenced Italy to pay 15,000 euros to Mr. Strumia.

Conclusions

Conclusions are twofold. On the one hand, the scientific literature seems to point clearly to the importance of father involvement in children's development. Father involvement should be encouraged and promoted at all levels. On the other hand, in the case of Italy, the reality is often very different. The cases reported for Italy and sentenced by the ECHR show that under circumstances of conflict, fathers' rights are often violated, and best interests of children are not secured by the authorities. This clearly points to the fact that (in Italy as elsewhere in Europe) policies for a better recognition of women in different aspects of social life including work are not matched by appropriate solutions for a better involvement of fathers in family life.

All this is rather disappointing. Should the lack of such solutions persist in the coming years, children would continue to be in a position of disadvantage. This should be prevented.

References

DEL BOCA, D. and PASQUA, V., 2010. Esiti scolastici e comportamentali, famiglia e servizi per l'infanzia. *FGA Working Paper nr. 36*.

GUIDORZI, R.E., 2017. *L'affidamento ingiusto del minore*. Rome: Dike Giuridica.

LAMB, M.E. and TAMIS-LEMONDA, C., 2004. The Role of the Father. In: LAMB, M.E., ed. *The role of the father in child development*. Hoboken, NJ: John Wiley & Sons.

MACDONALD, K. and PARKE, R.D., 1984. Bridging the gap: parent-child interaction and peer interactive competence. *Child Development*, 55(4), pp. 1265-1277.

MARTIN, A., RYAN, R. and BROOKS-GUNN, J., 2010. When fathers' supportiveness matters most: Maternal and paternal parenting and children's school readiness. *Journal of Family Psychology*, 24(2), pp. 145-155.

MCDOWELL, J.D. and PARKE, R.D., 2009. Parent correlates of children's peer relations: an empirical test for a tripartite model. *Dev. Psycol.*, 45(1), pp. 224-235.

POLONIATO, A., 2014. *L'affidamento delle "palle al piede"*. Vicenza: Caosfera.

POLONIATO, A., 2017. Giustizia: Genitori e tribunali. *Il Piccolo*, 02 February.

PRUETT, M.K., PRUETT, K.D., COWAN, C.P. and COWAN, P.A., 2017. Enhancing Father Involvement in Low-Income Families. *Child Development*, 88(2), pp. 398-407.

RYAN, M., MARTIN, A., and BROOKS-GUNN, J., 2006. Is One Good Parent Good Enough? Patterns of Mother and Father Parenting and Child Cognitive Outcomes at 24 and 36 Months. *Parenting: Science and Practice*, 6(2-3), pp. 211-228.

SARKADI, A., KRISTIANSSON, R., OBERKLAID, F. and BREMBERG, S., 2008. Fathers' involvement and children's developmental outcomes. *Acta Paediatrica*, 97(2), pp. 153-158.

STUDY INTERNATIONAL STAFF, 2018. *Oxford University welcomes more women than men for first time in history* [online]. [viewed on 01 June 2019]. Available from: https://www.studyinternational.com/news/oxford-university-welcomes-more-women-men-first-time-history/

TAMBURLINI, G., 2014. Interventi precoci per lo sviluppo del bambino: razionale, evidenze, buone pratiche, *Medico e Bambino*.

Inclusion of children with special needs: collaboration with parents

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Abstract

Introduction: Inclusion of children with special needs into regular school programs is a complex process. Therefore, good collaboration needs to be established between different experts and the child's family. The aim of our study was to explore the experience of teachers and occupational therapists in Slovenia with collaboration with parents. *Methods:* This was a qualitative study that included six focus groups (n = 36) and in-depth interviews with teachers (n = 12) as well as interviews with occupational therapists (n = 9) who worked with children with special needs. The interviews were analyzed using qualitative content analysis. *Results:* A paradigmatic model emerged from the analysis of the interviews with the teachers. It included the category "collaboration with parents". We identified both positive and negative aspects of interactions with parents. Important for the collaboration were information exchange, consistency, and routine. Active involvement from the parents often supported collaboration and inclusion. Occupational therapists reported that usually, they got involved because the parents wanted them to. Parents acted as "gatekeepers" and enabled the necessary adaptations of the environment. *Discussion and Conclusions:* Collaboration was most efficient when teachers, external experts, and parents worked as a team. It is essential to find ways that could improve the collaboration between parents of children with special needs, the school, and other professionals.

Keywords: children with special needs, inclusion, parents, teachers, occupational therapists.

Introduction

Children who attend regular school programs are a heterogeneous group. The contemporary school system aims to provide quality education for all of them,

indiscriminately of abilities. This goal requires close cooperation between different professionals and services, as well as collaboration with the children's families.

In the past few decades, legal efforts have been made to support inclusive education in Slovenia. The White Paper on Education in the Republic of Slovenia (1995) formed the foundation for the Elementary School Act, Organization and Financing of Education Act, and Act on the Guidance of Children with Special Needs (Official Gazette of the Republic of Slovenia, number 58/11). The new legislation aimed to establish a school system based on the principles of humanism and inclusion that could offer all individuals equal opportunities for education, personal development, and participation. However, there still appears to be a big divide between formal policies and everyday school practices (Mitchell, 2005; Kavkler 2008).

Many experts believe that for the inclusion model to be successfully implemented, teachers, parents, children, and other professionals working with children with special needs should feel included in the process. A child's family and the school are the primary settings for education and inclusion. Therefore, their cooperation needs to be effective (Rodrigues et al., 2015). International studies suggest that the involvement of parents can be an important indicator of the child's academic success (Hoover-Dempsey et al., 2005; Goldman & Burke, 2017). Children whose parents are more involved also exhibit fewer behavioral issues (Syriopoulou-Delli et al., 2016). Parents are often motivated by a sense of responsibility for the child and believe that their involvement can increase the child's success (Goldman & Burke, 2017).

Experts are still trying to develop better ways of collaborating with parents of children with special needs and studies in this area are scarce (Hoover-Dempsey et al., 2005; Syriopoulou-Delli et al., 2016). The purpose of our paper is to empirically investigate and critically evaluate the experiences of Slovenian teachers and occupational therapists with collaboration with parents of children with special needs. To our knowledge, this is the first qualitative study that attempts to explore this vital issue in the Slovenian context.

Methods

This was a qualitative study. The research questions we aimed to answer were:

RQ1: What are the experiences and opinions of Slovenian primary school teachers regarding their collaboration with parents of children with special needs who attend regular schools?

RQ2: What are the experiences and opinions of occupational therapists who work with students with special needs regarding their collaboration with schools, teachers, and the child's family?

Sample and data collection

We included 36 primary school teachers who were teaching year 1 to year 9 classes in regular schools. We conducted six focus groups, each group consisting of 6 teachers. Focus group interviews lasted approximately 90 minutes and were audio-recorded and transcribed verbatim. A week later, the author purposefully selected two teachers from each focus group and conducted a total of 12 individual interviews. Each interview was approximately 30 minutes long and was audio-recorded and transcribed verbatim. During the interviews, teachers were asked how they implemented inclusion in their classroom, how they cooperated with parents, and if and how they collaborated with other professionals.

The second part of the qualitative study included occupational therapists working with children with special needs who were enrolled in regular school programs. In Slovenia, the Ministry of Health finances 10.4 places for occupational therapists in the Developmental Units of Primary Care Centers. We aimed to include all occupational therapists who were employed for over 20 hours a week. We concluded that therapists working less than 20 hours a week would not be able to provide data of the same quality and depth compared to their colleagues who worked full time. Our final sample consisted of nine occupational therapists, which represented the majority of occupational therapists in Slovenia working in the Developmental Units of Primary Care Centers. Therefore, it was considered a representative sample. Individual interviews were conducted with occupational therapists, and they were audio-recorded and transcribed verbatim. An interview guide was used to ensure topics of interests were covered. Some of the questions were: Based on your experience, when does the collaboration between the school and the occupational therapist usually develop? Could you tell us about your collaboration with the children's parents? How would you evaluate this collaboration?

Data analysis

We used qualitative content analysis (Strauss and Corbin, 1998) to analyze focus group interviews and individual interviews. The following six steps were followed: (1) reading and re-reading the material to get familiar with it, (2) selection of coding units, (3) open coding of the whole text, (4) choosing and defining relevant concepts and categories in relation to research questions, (5) axial coding - comparing categories and arranging them in proposed relationships, and (6) developing the final theoretical formulation.

Results

Collaboration between teachers and parents

The teachers expressed that the relationship between them and the parents of children with special needs was often ambivalent. On the one hand, there were some difficult interactions that included irresponsible behaviors from the par-

ents. One teacher explained: "*This is mostly parents whose children have been formally assessed and have a decree that entitles them to adaptations/…/ and they think that the teachers have to do it all and they don't work with the kids at home*" (T3). In contrast, there was the other group of parents who were (overly) enthusiastic and actively engaged. However, they sometimes lacked insight into their children's abilities and insisted on regular (sometimes daily) interactions with the teachers.

The collaboration between parents and teachers was influenced by (1) the presence of initiative, motivation, and will; (2) awareness of the possibilities; (3) the parents' values. The teachers recognized that parents with self-initiative looked for additional services and assistance to complement the work done by the school. Awareness of possibilities was often linked with the parents' level of education. One teacher reported: *"When the parents are educated, they know exactly/…/where they have to go; when something will happen; they know the time frames/…/ They expect meetings; they suggest adaptations/…/ They provide their ideas*" (T37). In contrast, less informed parents, *"do not have specific suggestions/…/ However, they are very grateful for everything and think that that's that. They don't complicate"* (T37). The participants also expressed that the child is a "reflection of the family's values" (T32). One participant elaborated: *"We see a mirror image in a way that whatever is happening at home, is also happening in the school environment"* (T19).

The teachers' answers suggested that there were numerous difficulties that affected the collaboration between teachers and parents, including: (1) always searching for the teacher's mistakes; (2) disrespecting the teacher; (3) ignoring the teacher's professional autonomy; (4) difficulty accepting the child's abilities and having unrealistic expectations; (5) use of manipulation; (6) focusing on the grades only; (7) over-protecting the child; (7) not performing the parenting role.

Examples of positive collaboration were noted as well. One teacher said that the best scenario included "*working hand in hand or having one oar in the one hand and the other oar in the other hand so we can jointly row the boat with the child in*" (T3). Successful stories happened when the parents acted responsibly, respected the teacher, and openly communicated with them. Most important in this process were the following: (1) good information exchange; (2) developing trust and rapport; (3) consistency; (4) having a coordinated routine, both at school and at home. A successful collaboration created a well-balanced triangle, consisting of teachers, parents, and the child.

Collaboration between occupational therapists and parents

Parents emerged as the most important theme. They had a crucial role in the development of collaboration between the occupational therapist and the school. Five categories were developed around this theme: (1) first contact, (2) commu-

nication, (3) reasons for input, (4) occupational therapy work process, (5) barriers. Here we present the first three categories which help to answer RQ2.

The category "first contact" related to the initiators of the collaboration and the circumstances under which the occupational therapist made the first contact with the school. The involvement of occupational therapists in the schoolwork combined the elements of an established protocol (e.g., referral, decree) and mutual responsibility (from the school and from the therapist). Occupational therapy input was usually a part of the school entry preparations of the child with special needs. When the work of occupational therapists was not well recognized, the parents took the lead. One participant expressed: *"Parents act as a link, and we encourage them to communicate to the school our willingness to cooperate. However, it also depends on the readiness of the school"* (OT1). A similar experience was described by another participant: *"This first contact is usually through the parents. I offer assistance and then it's either through the parents or sometimes, the teachers and the school look for help. I do everything through the parents. Everything is via them. So, most often, I tell the parents that it's possible for me to visit the classroom because the teachers usually don't even know about it. So, the parents make the first contact. I do this also so that the teachers know that an external person is going to visit"* (OT6).

The category "reasons for input" pertained to the main reasons for occupational therapy input. Most often, the motives related to the child and their development as well as the parents and the school's desire to receive occupational therapy input. Frequently, the involvement of the parents resulted in the implementation of the intervention and its continuation. The overall conclusion was that the input was usually requested when the school encountered difficulties that were beyond their expertise.

The category "communication" related to information exchange and the circumstances under which the exchange happened. During the exchange, the differences between different professionals and their perspectives sometimes became more apparent. Occupational therapists needed to explain clearly what the child's deficits were and how to make them more acceptable. Parents often acted as messengers between different professionals and ensured that the recommendations were enacted in the home environment. Often, however, the exchange happened with the child's assistant rather than with the teacher. One participant explained: "*In my experience, the assistants take all the work on. Sometimes even too much. So, the contact is only with the assistant. When I come to the classroom, the teacher introduces herself, but all the other contact is with the assistant"* (OT3).

Discussion

Our findings suggest that actively engaged parents are often vital to the success of interprofessional collaboration and inclusion. Many actions are taken on their request. Both teachers and occupational therapists described how the

parents' input was essential. However, occupational therapists were more reliant on the cooperation with parents due to their undefined role within the school system. Their work with the child with special needs often depended on the parent's involvement. Occupational therapists frequently got involved following the parent's initiative, parents acting as gatekeepers for them. This suggests that all children in Slovenia might not have the same access to occupational therapy services at school. For instance, if the parents are not actively engaged, the therapists will have less opportunity to get involved as their access will be limited. In contrast, a Portuguese study of children with special educational needs found that parents did not necessarily participate in their children's school life and it was up to the schools to coordinate the child's engagements (Rodrigues et al., 2015).

Goldman and Burke (2017) suggest that parents of children with special needs should be encouraged to get involved in schoolwork in similar ways to other parents, for example, through observation of schoolwork, communication with the school, and school-related voluntary work. The authors also note that the interactions might vary depending on the child's age and developmental level (Goldman and Burke, 2017). Furthermore, it has been found that parents from low socioeconomic backgrounds can encounter additional barriers and challenges (Kalyanpur et al., 2000; Syriopoulou-Delli at al., 2016). For instance, they might not be familiar with current laws and regulations or struggle to interpret some information. This has also been observed by the teachers included in our study.

However, modern parents are often more informed than the previous generations were, which can change the dynamics of the collaboration (Ule, 2013). Parents can sometimes become overprotective, which has also been observed by Honkasilta et al. (2015) in their study of mothers of children with special needs. Parents can assume different roles depending on their activity levels and attitudes of the school. If they feel ignored, they act differently than if they feel welcomed. Future studies should look at the children and parents' experience of collaboration and their preferred strategies for collaboration.

We found that collaboration was best established when teachers, parents, and external professionals worked as a team and felt like valued, equal partners. However, currently, many barriers stand in the way of good collaboration and often, it depends on the goodwill and flexibility of those involved.

Conclusions

Parents have been recognized as an essential part of the inclusion model. However, different professionals have different experiences with their collaboration with parents. While some teachers report that the parent's actions can make their work more challenging, occupational therapists appear to be over-reliant on parents acting as mediators. It is essential to develop new strategies

that could improve the collaboration between parents of children with special needs, the school, and other professionals.

References

Bela knjiga o vzgoji in izobraževanju v Sloveniji. 1995. In: KREK J., ed. Ljubljana: Ministrstvo za šolstvo in šport RS.

HONKASILTA, J., VEHKAKOSKI, T and VEHMAS S. 2015. Power struggle, submission and partnership: Agency constructions of mothers of children with ADHD diagnosis in their narrated school involvement. *Scandinavian Journal of Educational Research,* vol. 59, no.6, pp. 674–690. http://dx.doi.org/10.1080/00313831.2014.965794

HOOVER-DEMPSEY, K.V., WALKER, J.M.T., SANDLER, H.M., WHETSEL, D., GREEN, C.L., WILKINS, A.S. and CLOSSON. K. 2005. Why do parents become involved? Research findings and implications. *The Elementary School Journal*, vol.106, no.2, pp. 105–130. https://dx.doi.org/10.1086/499194

KALYANPUR, K., HARRY, B. and SKRTIC C. 2000. Equity and advocacy expectations of culturally diverse families' participation in special education. *International Journal of Disability, Development and Education,* vol. 47, no.2, pp. 119–136. https://dx.doi.org/10.1080/713671106

KAVKLER, M. 2008. Posebne vzgojno-izobraževalne potrebe. In: KAVKLER, M., MORRISON CLEMENT, A., KOŠAK BABUDER, M., PULEC LAH S., VIOLA S.G., eds. *Razvoj inkluzivne vzgoje in izobraževanja – izbrana poglavja v pomoč* šolskim *timom*. Ljubljana: Zavod SR za šolstvo, pp.41–47.

MITCHELL, D. 2005. *Contentextualizing inclusive education: evaluating old and new international perspectives*. London: Routledge.

RODRIGUES, F.B., CAMPOS, S., CHAVES, C. and MARTINS, C. 2015. Family-school cooperation in the context of inclusion of children with special educational needs. *Procedia - Social and Behavioral Sciences*, vol. 171, pp. 309–316. https://dx.doi.org/10.1016/j.sbspro.2015.01.127

STRAUSS, A. and CORBIN J. 1998. *Basics of qualitative research: Techniques and procedures for developing grounded theory.* 2nd ed. Thousand Oaks, A, US: Sage Publication, Inc.

SYRIOPOULOU-DELLI, C.K., CASSIMOS, D.C. and POLYCHRONOPOULOU, S.A. 2016. Collaboration between teachers and parents of children with ASD on issues of education. *Research in Developmental Disabilities*, vol.55, pp. 330–345. https://dx.doi.org/10.1016/j.ridd.2016.04.011

ULE, M. 2013. Governance of educational trajectories in Slovenia: Dilemmas and contradictions. *Annales: Series Historia Et Sociologia,* vol.23, no.2, pp. 290–302.

The influence of psychosocial interventions on resilience of abused children

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Abstract

Introduction: Negative experiences early childhood, such as family abuse, affects their biological and psychological system and development. Consequences are shown in short- and long-term behavioral and mental problems. *Methods:* We reviewed the existing scientific and professional literature. We focused on current literature in Slovene, Croatian and English language, between 2002 and 2019. The search was done in the Slovene database COBIB.SI and in foreign databases such as Academic Search Complete, CINAHL, SAGE Journals Online, Science Direct and PubMed. *Results:* Resilience to stress is a complex multidimensional construct. There is little literature that would not only focus on the approach or intervention, but also on the relevance and quality of these interventions. Lack of attention is also devoted to exploring how different interventions and decisions affect children's behavioral and mental health. *Discussion and conclusion:* The children's degree of resilience is influenced by supporting pillars and also by the quality of interventions. Revictimization, a longer period between first and last reported incident of maltreatment and consequently the age at first and age at last reported incident were significant predictors of mentioned degree.

Key words: child abuse, resilience, psychosocial impact, interventions.

Introduction

Abuse of children is a violation of children's basic rights with devastating consequences for the rest of their lives. It occurs independently of age, sex and culture. Cases are underreported and may not be disclosed at the right time (Borg et al., 2018). It is also unclear which interventions should professionals use, what is their role in promoting resilience or even how to work properly in mutual cooperation with multidisciplinary teams, to contribute to the best possible solution for the child and his resilience (Ungar, 2018). There are very few studies that simultaneously discuss how different interventions and deci-

sions affect the children, their behavioral and mental health. The resilience of the child is not latent, but is the result of various support systems and complex interventions (Ungar, 2018).

Recognition of abuse or neglect

In Slovenian legislation, the Family Violence Prevention Act (ZPND) defines in Article 3, as domestic violence, the following: "Domestic violence is any use of one family member's physical, sexual, psychological or economic violence against another family member or neglect, regardless of age, gender or any other personal circumstance of the victim or perpetrator or the perpetrator of violence (ZPND, 2008). We emphasize the importance of asking questions about abuse or neglect in a direct, risk-free and developmentally appropriate way that the child needs (Borg et al., 2018).

Assistance in Slovenia

Institutions dealing with child abuse are schools, kindergartens, social services, health centers, judicial authorities and internal affairs bodies (Selimanović, 2016). Selimanović (2016) also argues that responsible institutions poorly cooperate with each other. All professionals, involved in proces of child abuse, have to be familiar with their legal obligations, and they have to be able to understand the prevalence and incidence of child abuse. They have to be able to recognize early signs and symptoms of different types of abuse (Coulborn Faller, 2017). Act 6 of the Prevention of Domestic Violence Act states that it is the duty of all, especially professionals, to inform the appropriate institution in the event of suspected abuse of the child and that is social work (ZPND, 2008). The 3. paragraph of act 14 of the ZPND (2008) states, that the responsibility of the Social Work Center is also to establish a multidisciplinary team, shaped by the ministry for Work, Family and Social Affairs, where they can - if necessary, create a type of help assistance for victims (ZPND, 2008).

Types and importance of resilience

Although we are all born with a certain potential to overcome stressful situations, resilience is not innate ability. Rutter (1999) conceptualized resilience as a dynamic process involving the interaction between risk factors and protective factors - which included individuals, their families and their community/ environment.

Individual resilience

It can be demonstrated by individuals who adapt to emergencies and achieve positive and unexpected results in times of distress. Individual resilience is described as the capacity of the individual to cope with problems, by considering behaviour that a person uses to avoid distress (Hooper, 2009). Characteristics

of children: good intellectual abilities, unconflicted temperament, good social skills, problem solving strategies, self-efficacy, self-confidence, good self-esteem, interests/hobbies, religion/spirituality.

Family resilience

Family resilience is defined as typical family dimension that offers opportunities that help the family to be resistant despite changes and crisis situations. It is the ability of the family to regain its integrity and well-being of family members and keeps the family community as a whole (Chang et al, 2015). Family characteristics, from which they originate: close, confidential connection with at least one family member, family dynamics and parenting style (warmth, high expectations), favorable socioeconomic position of the child/family, close family relationships with wider families environment, the culture of relations between children and important adults.

Resilience in the wider community (environment)

Some theorists have argued that the study of resistance should take into account both environmental and biological factors. Characteristics of their wider environment: association with prosocial adults outside the family, including associations of organizations, quality, inclusive school, access to education at various levels (from pre-school to university) favorable environment for lifelong learning, the possibility of wuality education, the availability of social systems for quality leisure, intergenerational cooperation and other environmental influences (Kiswarday, 2013).

Promoting strategies for childhood resilience

American Psychological Association (2019) lists ten different ways that help build and promote childhood resiliance: Establish connections with friends, build a strong family support network; Encourage a child to learn how to help others; Encourage the child to develop his daily routine; Learning a child how to focus on something that worries him; Learning a child how to care for himself; Developing realistic and reasonable goals; Helping a child to learn to nurture a positive view of himself and to trust himself in solving problems and making appropriate decisions; Help the child to look at the situation in a broader context and to maintain a long-term perspective; Encouraging a child to look for opportunities to discover himself; Help the child to accept the change as part of life. Numerous scientific studies of children facing great adversity have shown just how important resilience is for successful growth (Brooks and Goldstein, 2002). Resilience is seen as more than simple recovery from insult, rather it can be defined as positive growth or adaptation following periods of homeostatic disruption (Richardson, 2002).

Conclusion

Resilience is an important segment in every child life. Many children are exposed to stressful events in early life that may affect their daily functioning. Therefore every child needs to have an individualized and holistic assessment. By giving them great support, they can show risk and protective factors. Researches show that risk factors can influence and decrease a child capability to develop a resilience, that's why is important to recognize those factors and take action as soon as possible. In this way we can promote safety, health and supportive environment for the child. By understanding the process of resilience in children, improving intervention and taking preventive action can significantly improve children safety.

References

AMERICAN PSICHOLOGICAL ASSOCIATION, 2019. *Resilience Guide for Parents & Teachers* [online]. [viewed 17 June 2019]. Available from: https://www.apa.org/helpcenter/resilience.

BORG, K., SNOWDON, C. and HODES, C., 2018. A resilience-based approach to the recognition and response of child sexual abuse. *Paediatr Child Health,* vol. 29, no. 1, pp. 6–14.

BROOKS, R. and GOLDSTEIN, S., 2002. Raising resilient children: fostering strength, hope, and optimism in your child. 1 ed. *McGraw Hill Professional*, pp. 40–50.

CHANG, W., NEO, A. and FUNG, D., 2015. In Search of Family Resilience. *Psychology*, vol. 6, no. 13, pp. 1594-1607.

COULBORN FALLER, K., 2017. Interventions for physically and sexually abused children [online]. *Encyclopedia of Social Work,* [viewed 16 june 2019]. Available from: https://oxfordre.com/socialwork/view/10.1093/acrefore/9780199975839.001.0001/acrefore-78019997583%209-e-1224.

HOOPER L., 2009. Individual and Family Resilience: Definitions, Research, and Frameworks Relevant for All Counselors. *The Alabama Counseling Association Journal*, vol. 35, no. 1, pp. 19-26.

KISWARDAY, V., 2013. An analysis of the concept of resilience in the context of education. *Andragoška spoznanja*, vol. 19, no. 46, pp. 46–64.

RICHARDSON, G.E., 2002. The metatheory of resilience and resiliency. *Journal of Clinical Psychology*, vol. 22, no. 58, pp. 307–321.

RUTTER M., 1999. Resilience concepts and findings: Implications for family therapy. *Journal of Family Therapy*, vol. 21, no. 2, pp. 119-144.

SELIMANOVIĆ, A., 2016. *Psihična in fizična zloraba otroka v družini in znaki zlorab v šoli:* master thesis [online]. Ljubljana: Univerza v Ljubljani, Pedagoška fakulteta, pp., 26–32. [viewed 25 June 2019]. Available from: http://pefprints.pef.uni-lj.si/3647/1/LEKTORIRANO_Magistrska_2_M-SelimanovicAzra-.pdf.

UNGAR, M., 2018. The differential impact of social services on young people's resilience. *Child Abuse & Neglect,* vol. 78, pp. 4–12.

ZAKON O PREPREČEVANJU NASILJA V DRUŽINI (ZPND), 2008. Official gazette of the Republic of Slovenia [online], no. 16/2008, 3. Available from: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/84974.

ZAKON O PREPREČEVANJU NASILJA V DRUŽINI (ZPND), 2008. Official gazette of the Republic of Slovenia [online], no. 16/2008, 6. Available from: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/84974.

ZAKON O PREPREČEVANJU NASILJA V DRUŽINI (ZPND), 2008. Official gazette of the Republic of Slovenia [online], no. 16/2008, 13. Available from: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/84974.

Postural control and balance in children with cerebral palsy after hypotherapy

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Abstract

Introduction: Postural control and management of the posture is the ability of the body to maintain an upright position with more sensory motor processes. At children with cerebral palsy (CP), these processes are often limited due to problems in one or more systems. Hypotherapy is a therapy which uses the horse and with its three-dimensional movement, enables to conect and control the posture as well as the balance. The article summarizes the literature review, which describes the effect of hypotherapy and therapeutic riding on the control of posture and balance in children with CP. *Methods:* The systematic method of the literature is reviewed, the effect of hypotherapy and therapeutic riding to the control of posture and balance of children with CP. With keywords (therapeutic horseback riding, equine movement therapy), articles were searched in the database: COBISS, PEDRO, CINAHL, Springer link, PubMed, Web of Science, Ebsco host and ProQuest. *Results:* Out of 36 articles according to inclusion criteria (published articles, IMRD method and investigated influence of hypotherapy and therapeutic riding), 9 articles are included in the shortlist. In all 9 articles, the authors mention a positive effect to the control of posture and balance. *Conclusion:* Summary of the results of scientific literature on the positive effect of hypotherapy and therapeutic riding to the control of posture and balance at children with cerebral palsy provides the foundations for further research.

Key words: hypotherapy, therapeutic riding, cerebral palsy, posture control, balance

Introduction

The effect of Hypotherapy (H) and therapeutic riding (TR) to posture control and balance in children with cerebral palsy (CP) has been shown in a systematic review of literature.

One of the many definitions of the CP describes that cerebral palsy is a term used as inconsistent of brain disorders and as a result of a malfunction or developmental abnormality in a before, during or post-natal period. Disorders are seen like poor control of the movement, slowing down the length of the muscles, and deformations of the skelet (Finnie, 2008; Shepherd, 1995).

Children with CP often have problems with posture control and balance, which is very important for daily life activities (Shummway-Cook and Woollacott, 2001). Neurological control of posture regulation takes on two different levels. The first level consists of a direct - specific adjustment when the balance of the body is at risk. The second level is included in the regulation of the directional adjustment, which depends on the multisensor angular flow from the somatosensory, visual and equilibrium system (Shepherd, 1995: Van der Haide et al, 2005).

One of the therapeutic methods to treat children with CP is also hipotherapy (Shepherd, 1995; Zadnikar and Rugelj, 2011).

Hypotherapy is physiotherapy on a neurophysiological basis, carried out on and at the horse (Strauß, 2006). Positive effects of horse movement in the treatment of persons with sensory - motion disorders are reflected in a three-dimensional movement that induces a straight and equilibrium reaction in a person, promotes dynamic stability of the carcase and proximal limbs of the limbs and contributes to the construction of posture reactions (Zadnikar and Kastrin, 2011). TR is performed by riding instructors who teach riders of different motor skills. The riders in a H sit relaxed on a horse. Riding enables and provides an opportunity for the integration of the kinesthetic, visual and vestibular flow, which are fundamental for the control and management of the posture (Shummway-Cook and Woollacott, 2001; Zadnikar and Rugelj, 2011).

Metods

Data collecting

International databases are used: PubMed, Ovid MEDLINE, CINAHL (Cumulative Index to Nursing and Allied Health Literature), Web of Science, Ebsco host. Search literature are includ articles on the influence of H or TR with the posture control and balance. The key words used: TR and H (developmental riding therapy, equine-movement therapy, riding therapy, riding for disabled, therapeutic horseback riding and therapeutic riding) and CP, posture control and balance. Articles on TR were 32 (with CP it is 14), the H and posture was 31 articles (with CP 22). The number of articles that included H and TR in subjects with CP was 36.

Inclusion criteria

The inclusion criteria of the articles were as follows: the whole articles, they were structured by the IMRAD (introduction, methods, results and discussion) scheme and the investigated the influence of H or TR on the posture control or balance in persons with CP. Nine articles are included in the transparent contribution.

Methodological assessment of the quality of articles

The articles are evaluated with a methodological assessment of quality by Law (Law et al., 1998) for the use of the "Guidelines for a Critical Review of Quantitative Studies" in which 16 requirements - questions. None of the articles reached 16 points, the range reached was between 13 and 5 points. The methodological evaluation of the articles gives us a total score of 9.77, indicating the range between the rating moderate and the score well.

Results

All articles explore the effect on the posture control and balance. Measurement of the effects researched was investigate in various ways with different measuring tools, before and after riding, shows in table 1. Table 1 is shows: all the measuring tools; the research and control groups, their composition and the tasks they have performed; and the duration of research of riding. The results of all studies were made on a common denominator, so we decided to classify the effects only after that, whether the positive effects (+) or the effect were not (-), shown in Table 1.

Table 1: Summary of studies of hypotherapy and therapeutic riding studies

AUTHOR /YEAR	*TITLE OF ARTICLES*	*GROUPE and IMPLEMENTATION on in*	*DURATION OF HT or TR/ how much time*	*TESTS*	*RESULTS (-,+) STATISTICALY SIGNIFICANT*
BENDA 2003	Improvements in Muscle Symmetry in Children with CP after Equine-Assisted Therapy (Hippotherapy)	RG – 7; 4 – 12 year; CP CG – 6; 4 – 12 year; CP RG – HT CG – barrel	1 experiment RG – 8 min HT CG – 8 min sitting on a barel	Pre-test/post-test sum total muscle asymmetry – EMG after each intervention 10s seats, 10 s stand, 10 s walk	Middle value asimet: 55,5 (SD 82,5) HT 11,9 (SD 29,9) barrel Middle value in % improvement: 64,6% (SD 28,3) HT -12,8% (88,8) barrel Muscle simmetry (+)

AUTHOR /YEAR	*TITLE OF ARTICLES*	*GROUPE and IMPLEMENTATION on in*	*DURATION OF HT or TR/ how much time*	*TESTS*	*RESULTS (-,+) STATISTICALY SIGNIFICANT*
BERTOTTI 1988	Effect of Therapeutic Horseback Riding on Posture in children with CP	RG – 11; 2 – 9 year; CP CG – 11; 2 – 9 year; CP RG is the same KG –TR	10 weeks none 10 weeks TR 2x/week, 60 min	Two pre-test One post-test Bertotti test – Postural Assessment Scale	Mediana Pre-test1 – 20 Pre-test 2 – 22 Post-test – 27 posture (+)
HAEHL 1999	Influence of Hippotherapy on the Kinematics and Functional Performance of Two children with CP	RG – 2; 9 and 4 year; CP CG – 2; 9 and 7 year; H RG – HT CG – one shot while riding	12 weeks HT 1x/week 1child, 20 min 1 child, 40 min	I. phase –1x video, 2 healthy child II. phase – test postural control and postural coordination PEDI (1 before and 1 after 12 weeks HT)	In both of children improved postural control PEDI: 1. child improvement, 2. child no changes Coordination trunk (-) PEDI (-)
HAMIL 2007	The Effect of Hippotherapy on Postural Control in Sitting for children with CP	RG – 3; 2,5 – 4,5 year; CP CG - / RG – HT	10 weeks HT 1/week, 50 min	SAS – Sitting Assesment Scale GMFM – Vprašalnik za starše	SAS – 2. child improvement, 1no changes; GMFM – 1. improvement; at 2 worse scores SAS – (-) GMFM – (-)
KUCZYNSKI 1999	Influence of artificial saddle riding on postural stability in children with CP	RG – 25; 3 – 10 year; CP CG – 33; 3 – 10 year; H RG and CG BABS – artificial saddle	12 weeks 2/week, 20 min	Measurement on tensiometric plate center of pressure analysis and autoregressive sampling technique (foot adjustment)	Postural control Pre-test : sagit 11.2 – 5.7 front 11.5 – 6.4 Pos-ttest: sagit 9.0 – 4.1 front 8.1 – 4.0 Postural stability (+) Foot adjustment (+)
MACKINNON 1995	A study of Therapeutic Effects of Horseback Riding for children with CP	RG – 10; 5 – 11 year; CP CG – 9; 4 – 9 year; CP RG – THR CG – none riding	6 months – 26 weeks 1/week, 60 min	Bertotti test GMFM PDMS BRUININKS VINELAND HARTER CBC	Mild CP no effect, Moderate CP yes effect Parents see + effects at all PDMS A – (+) HARTER – (+) CBC activities – (+)

AUTHOR /YEAR	TITLE OF ARTICLES	GROUPE and IMPLEMENTATION on in	DURATION OF HT or TR/ how much time	TESTS	RESULTS (-,+) STATISTICALY SIGNIFICANT
MACPHAIL 1998	Trunk Postural Reactions in Children with and Without CP During Therapeutic Horseback Riding	RG – 6; 5 – 12 year; CP CG – 7;6 – 11 year; H RG and CG – TR	3 x performed TR Recorded video the movement of the horse and riders pelvic	Video in frontal line – lateral deviation trunk (C7, L5) and pelvic riders and horse	Lateral deviation trunk: H children – 5.8°; CP children – 10.2°; CP diplegia have 65% to 75% postural reaction of trunk Tetraplegia have 10% to 35% postural react trunk Diplegia (+) Tetraplegia (-)
QUINT 1998	Powered saddle and pelvic Mobility of children with CP	RG – 13; 9 – 16 year; CP CG –13; 9 – 16 year RG – BABS CG – static sadlle	4 weeks 10 time, 10 min	Measuring - passive movement of the pelvis before and after, with photographs	Passive movement of pelvis: BABS increases for 20.8° Static saddle for 8.85° Pelvic mobility (+)
SHURTLEFF 2009	Changes in Dynamic Trunk/ Head Stability and Functional Reach After Hippotherapy	RG – 10; 5 – 13 year; CP CG – 8; 5 – 13 year; H RG and CG – HT	12 weeks 1/week, 45 min	Barrel test – measure stability of trunk and haed with the video FRT 2 weeks before and after HT after 12 to 14 weeks again one post-test	Head/trunk movement: is improved in both post-test, 1 and 2 Funkc.reach test: Is improved in both post-test, 1 and 2 Dinamic stability trunk/head (+) Funkcional reach (+)

LEGEND: CP - cerebral palsy; RG - research group; CG - control group; min - minute; H - healthy children; PEDI - Pediatric Evaluation Disability Inventory; CBC - Child Behavior Checklist; PDMS - Peabody Developmental Motor scale; Bruininks - Oseretsky test; VABS - Vineland Adaptive Behavior Scales; Harter Self - Perception Scale; Bertotti test or Postural Assessment Scale, GMFM - Gross Motor Function Measure; SAS - Sitting Assessment Scale, FRT - Functional Reach test, PEDI - Pediatric Evaluation Disability Inventory; CBC - Child Behavior Checklist; PDMS - Peabody Developmental Motor Scale; Bruininks - Oseretsky test; VABS -Vineland Adaptive Behavior Scales; Harter Self - Perception Scale

Discussion and conclusion

All articles consider the effects of H or TR on postural control or the balance of children with CP. In four articles effects after H ware measured, in three articles after therapeutic riding, and in two articles to prove the effects after sitting

on artificial saddle. Both types of riding improve the control of the posture and balance. The authors find that CP is very complex, so the number of children in the research and control group is too small to be used for the whole sample of the CP population. There are differences in the effects of children with a mild form and a more severe form of CP.

The recognition that manifested throughout the history of proving and measuring the effects of both H and TR, would point to a small sample of the research and control group and the great variety of CP.

References

BENDA, W., MCGIBBON, N. and GRANT, K., 2003. Improvements in muscle symmetry in children with cerebral palsy after equine-assisted therapy (hippotherapy). *Journal of Alternative & Complementary Medicine*, vol. 9, no. 6, pp. 817 – 825.

BERTOTTI, D.B., 1988. Effect of Therapeutic Horseback Riding on Posture in children with CP. *Phys Ther,* vol. 68, no. 10, pp. 1505 – 1512.

FINNIE, N.R., 2008. *Handling the young children with cerebral palsy at home.* 4th ed. Oxford

HAEHL, V., 1999. Influence of Hippotherapy on the Kinematics and Functional Performance of Two children with CP. *Ped Phys Ther*, vol. 11, pp. 89 – 101.

HAMILL, D., WASHINGTON, K. and WHITE, O.R., 2007. The Effect of Hippotherapy on Postural Control in Sitting for children with CP. *Phys Occup Ther Pediatr*, vol. 27, no. 4, pp. 23 – 42.

KUCZYINSKI, M.M. and SLONKA, K., 1999. Influence of artificial saddle riding on postural stability in children with cerebral palsy. *Gait & Posture*, vol. 10, pp. 154 – 160.

LAW, M., STEWART, D., POLLICJ, N., LETTS, L., BOSCH, J. and WESTMORLAND, M., 1998. *Critical Review Form – Quantitative Studies; and Guidelines for Critical Review Form – Quantitative studies* (McMaster University)

MACKINNON, R.J., NOH, S., LARIVIERE, J., MACPHAIL, A., ALLAN, D.E. and LALIBERTE, D., 1995. A study of Therapeutic Effects of Horseback Riding for children with CP. *Phys Occup Ther Pediatr,* vol. 15, no. 1, pp. 17 – 34.

MACPHAIL, H., EDWARDS, J., GOLDING, J., MILLER, K., MOISER, C. and ZWIERS, T., 1998. Trunk Postural Reactions in Children with and Without CP During Therapeutic Horseback Riding. *Pediatr Phys Ther,* vol. 10, pp. 143 – 147.

QUINT, C. and TOOMEY, M., 1998. Powered saddle and pelvic Mobility of children with CP. *Physiotherapy,* vol. 84, no. 8, pp. 376 – 384.

SHEPHERD, R.B., 1995. *Physioteraphy in pediatrics*. 3th edition. Oxford

SHUMMWAY-COOK, A. and WOOLLACOTT, M.H., 2001. *Motor control: theory and practical applications*. 2nd ed. Philadelphia: Lippincott, Williams & Wilkins.

SHURTLEFF, T.L., STANDEVEN, J.W. and ENGSBERG, J.R., 2009. Changes in Dynamic Trunk/Head Stability and Functional Reach After Hippotherapy. *Arch Phys Med Rehabil*, vol. 90, pp. 1185 – 1195.

STRAUß, I., 2000. *Hippotherapie*. 3th edition. Stuttgart: Hipokrates Verlag

VAN DER HEIDE, J.C. and HADDERS-ALGRA, .M., 2005. Postural muscle dyscoordination in children with cerebral palsy. *Neural Plasticity*, vol. 12, no. 2-3, pp. 197 – 203.

ZADNIKAR, M. and RUGELJ, D., 2011. Postural Stability after Hippoterapy in an Adolescent with Cerebral Palsy. *J Nov Physiother*, vol. 1, pp. 106 – 111.

Doi:10.4172/jpn.1000106

ZADNIKAR, M. and KASTRIN, A., 2011. Effects of hippotherapy and therapeutic horseback riding on postural control or balance in children with cerebral palsy: a meta-analysis. *Dev Med Child Neurol*, vol. 53, no. 8, pp. 684 – 691.

The impact of sports activities on the adolescents socialization

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Abstract

Introduction: Secondary socialization refers to the process when individuals begin to enrole in various social roles. Young people live in a period of growing social media network and they spend several hours daily using it, are physically inactive, have a sedentary lifestyle and lose interest in physical activity. Lack of physical activity can impair teenagers healthy growth and development, and negatively affect their physical and mental health. Research shows that sports provide physically and socially development by improving social skills with interacting to each other. *Methods:* Literature review as a descriptive research method was used in this article. We identified studies form searching literature in English language, published from 2008 - 2019 in following databases: Pubmed, Cochrane Library, Science direct, ERIC, Web of Science and DIKUL. *Results:* The results of studies report many positive effects of sport on physical and mental health, and also on development of social skills on young who are actively involved in sport. There are positive effects such as impact on growth and development of children, learning of different skills, development of their identity, development of sense of belonging, learning different values, patterns of behaviour, building friendship, they can teach to prevent and solve conflicts and improve communication. *Discussion and conclusion:* The modern lifestyle is mostly sedentary, and its main characteristic is lack of physical activity. Many organizations, global and national ones, promote sport and physical exercise as a form of physical activity in children, adults and the elderly, but a lifestyle change is a complex process that requires a lot of effort before positive effects on socialization can be detected.

Keywords: sport, physical activity, adolescent, socialization, sport socialization

Introduction

The concept of socialization is defined in the broad sense as a process through which a human being becomes a member of a society. There are two types of socialization namely primary and secondary socialization. First type occurs during childhood and refers mainly to family and the second type or secondary socialization refers to the period of childhood in which a child begins to interact strongly with other social environments. The child in this period is trying to integrate into a group of colleagues, friends and is no longer under the control of parents (Bi et al. 2018).

Young people in today's world live in a period of growing social media network and they spend several hours daily using it. Social media offer them entertainment, social connection and communication. There are benefits of the digital world media but there are also risks of using it (Keeffe and Clarke-Pearson 2011). A high risk represents sedentary lifestyle and physical inactivity of young. Lack of physical activity can impair teenagers healthy growth and development, and negatively affect their physical and mental health (Pomohaci and Sopa 2016).

Many projects try to improve physical activity and the fundamental movement skills of children (Pot et al. 2016). Many studies emphasize the positive effects on persons who are actively involved in sport. Physical activity has multiple benefits for physical, mental, cognitive, and psychosocial health that contribute to learning (Warburton et al. 2006). Adolescents who are actively involved in sport can develop many different skills, values, patterns of behaviour, they can teach to prevent and solve conflicts and to communicate. Sport has generally significant role in socialization.

Motor activities are an important source of socialization, communication and social integration being an ideal setting in forming young people and their further development. Sports improve physical and mental health but it can also improve our social skills. Through playing sport they know what is motivation and competition that help them to develop future life and career (Pomohaci and Sopa 2016).

Methods

Literature review as a descriptive research method was used in this article. We identified studies searching the literature in English and Slovenian language published in period between 2008 and 2019 in following databases: Pubmed, Cochrane Library, Science direct, ERIC and Web of science during the March to May 2019 period. The keywords used are the following: sport, physical activity, adolescent, socialization, sport socialization. We included only scientific articles that analysed children. We formulated the following research question: "How sport activities impacts on socialization of young?"

Results

After conducting the literature search and applying all inclusion criteria, we incorporated seven studies on impact of sport activities on adolescent socialization. The studies are diverse in terms of methodological approaches used (Table 1).

Table 1: Overview of the reviewed studies.

Authors and year of publication	*Purpose of research*	*Methodology*	*Results*
Shameli et al. 2013	Investigation of sport effect on shyness reduction in athlete and non-athlete boy teenagers.	Cross-sectional study, multistep cluster sampling method, Chick and Boss shyness scale questionnaire, (n=44).	Athlete and non-athlete teenagers showed no significant difference in shyness score.
Seabra et al. 2013	Psychosocial correlates of physical activity in school children aged 8–10 years.	Interviews and standardized questionnaires.	Boys and girls differed in perceived attractiveness of physical activity and perceived physical competence, both of which influenced level of physical activity.
Rossi et al. 2014	Effects of the "Segundo Tempo" program on social inclusion in the city of Feira de Santana, Bahia (Brazil).	Ethnographic study, document analysis, participant observation, and semi-structured interviews (n=27).	Results of this study point out the importance of sport in social matters while it provides better opportunities for needy individuals, as well as for children and adolescents at social risk.
Riciputi et al. 2016	Participant perceptions of character concepts in a physical activity-based positive youth development program.	Qualitative case study, thematic data analysis (n=24).	The findings provide participant-centred guidance for understanding youth personal and social development through physical activity in ways that are meaningful to participants, which is particularly needed for youth in low-income communities with limited youth programming.
Pot, Verbeek, van der Zwan and van Hilvoorde 2016	Socialisation into organised sports of young adolescents with a lower socio-economic status.	Qualitative study, interviews (n=21).	Findings of this study, showed that the way in which sport socialisation works is relatively independent of socio-economic status and that the interplay between socialising agents is different for young adolescents compared to younger children.

Authors and year of publication	*Purpose of research*	*Methodology*	*Results*
Baciu and Baciu 2015	Quality of life and student's socialization through sport.	Literature review	Practicing sports for children and adolescents has obvious contribution to their positive general development.
Eime et al. 2013	Psychological and social benefits of participation in sport for children and adolescents.	Literature review	Psychological and social health benefits of sports were reported by numerous studies, the most commonly improved are self-esteem, social interaction and depressive symptoms.

Discussion

The main characteristic of modern lifestyle is lack of physical activity, however, it can impair healthy growth and development of teenagers, and negatively affects their physical and mental health. Psychological and social health benefits of sports were reported by numerous studies, with the most commonly improved self-esteem, social interaction and depressive symptoms (Eime, Young, Harvey and Payne 2013). Recognized as fundamental to human development, sports practices have come close to the fields of health and education. As experts found, sport helps prevent health problems, absenteeism, drug use and crime, and at the same time increases self-esteem, cooperation, solidarity and social inclusion (Rossi, De Alencar, Rossi and Pereira 2014). Pot (2014) reported that the economic situation of children does not significantly affect their participation in sporting activities, but their parents play a major role in the promotion of participation in sport. In the USA, they implement programs of positive development of young people (PYD) based on physical activity. Young people report that their programs helped them to establish positive mutual relationships, raise self-esteem and help them with moral growth, both between programs and onwards (Riciputi, McDonough and Ullrich-French 2016). Research also shows that competition sports are not suitable for younger children, so they should be avoided. Participation in physical activities was also more enjoyable in children (9-15 years) who were not forced to compete and win, but encouraged them to experiment with various activities (Seabra, Seabra, Mendonça, Brustad, Maia, Fonseca and Malina 2013). As the main reason for engaging in physical activities, young people stated that it is most important to be with friends and create new friendships. Significant gender differences were also observed. The girls clearly emphasize the importance of friendship, and participation in physical activities increased if they had friends with whom they could share sports activity (Seabra, Seabra, Mendonça, Brustad, Maia, Fonseca and Malina 2013). Some studies suggest that physical activity programs should be designed specifically for boys and girls, as girls feel threatened in more severe physical exercise and athletic sports. Based on the results, teenage athletes

and non-athletes did not show significant differences in the results of the shyness test (Shameli, Barzide and Gholami 2013). Earlier studies have shown that sports organizations increase the socialization of adolescents, but shyness is not a social virtue (Shameli, Barzide and Gholami 2013).

Conclusions

The results of the World health organization survey showed that adolescents aged 11-17 years were insufficiently physically active in 2010 (WHO 2014). The modern lifestyle is mostly sedentary that means lack of physical activity. Many health organizations, global and national ones, promote sport and physical exercise as a form of physical activity in children, adults and the elderly, but a lifestyle change is a complex process that requires a lot of effort before positive effects on socialization can be detected. The implementation of systemic measures of different sectors, with an example of good practice in reducing overweight and obesity in children and adolescents is needed.

References

BACIU, C. AND A. BACIU Quality of Life and Students' Socialization through Sport. Procedia - Social and Behavioral Sciences, 2015/12/03/ 2015, 209, 78-83.

BI, X., Y. YANG, H. LI, M. WANG, et al. Parenting Styles and Parent-Adolescent Relationships: The Mediating Roles of Behavioral Autonomy and Parental Authority. Frontiers in psychology, 2018, 9, 2187-2187.

EIME, R., J. YOUNG, J. HARVEY AND W. PAYNE Psychological and social benefits of sport participation: The development of health through sport conceptual model. Journal of Science and Medicine in Sport, 2013, 16, e79-e80.

KEEFFE, G. S. AND K. CLARKE-PEARSON The Impact of Social Media on Children, Adolescents, and Families. Pediatrics, 2011, 127(4), 800.

POMOHACI, M. AND I. S. SOPA THE IMPORTANCE OF SOCIALIZATION THROUGH SPORT IN STUDENTS GROUP INTEGRATION. Revista Academiei Fortelor Terestre, 2016, 21(2), 151-160.

POT, N., J. VERBEEK, J. VAN DER ZWAN AND I. VAN HILVOORDE Socialisation into organised sports of young adolescents with a lower socio-economic status. Sport, Education & Society, 04// 2016, 21(3), 319.

RICIPUTI, S., M. H. MCDONOUGH AND S. ULLRICH-FRENCH Participant Perceptions of Character Concepts in a Physical Activity–Based Positive Youth Development Program. Journal of Sport and Exercise Psychology, 2016/10/01 2016, 38(5), 481-492.

ROSSI, R., R. DE ALENCAR, M. ROSSI AND A. PEREIRA Sport and Social Inclusion. Study of the Program "Segundo Tempo" in Feira De Santana, Bahia - Brazil. Journal of Physical Education and Sport, 2014, 14(4).

SEABRA, A. C., A. F. SEABRA, D. M. MENDONÇA, R. BRUSTAD, et al. Psychosocial correlates of physical activity in school children aged 8-10 years 2013.

SHAMELI, L., P. BARZIDE AND S. GHOLAMI Does Sports Reduce Shyness in Boy Teenagers? 2013.

WARBURTON, D. E. R., C. W. NICOL AND S. S. D. BREDIN. Health benefits of physical activity: the evidence. In.: Canadian Medical Association, 2006, p. 801.

WORLD HEALTH ORGANISATION (WHO). *Global Status Report on Noncommunicable Diseases 2014*. Edtion ed. [N.p.]: World Health Organization, 2014. ISBN 9789241564854.

Do you know what you eat?

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Abstract

Introduction: Obligatory labelling of pre-packaged foods with nutritional value is defined by legislation for a several years already, but consumers' responses prove that many of this information is not used. Simply because they do not understand it, they do not have time or do not even notice it. Slovenian Consumers' Association, within the project Declaration = Information, has developed a mobile application "Veš kaj ješ", which will help also children and adolescents, to make healthier choices. *Methods:* The application was developed together with Jožef Stefan Institute, which provided the technical development for the application and a link to the database with over 20,000 foods collected at the Nutrition Institute. Presentation and promotion of the application took place through various organizations, media and social networks. *Results:* Consumers use food composition data more often if they are presented in a simpler and more understandable way. Labelling system was developed that colours key nutrition data with traffic light colours. *Conclusions:* In a survey (2016), we found that when the product is presented with such labelling system, as many as 94% of consumers correctly evaluate the nutritional profile. Considering that, we decided to use traffic light system in our application. VešKajJeš application will help young people to healthier everyday choices. It may lead them to a more conscious and balanced way of eating, as they will be able to select and compare food at the point of sale by simply scanning the barcode. Its use is simple, fast, and the information is given in an understandable way.
Key words: mobile application, healthy choices, declaration, dietary traffic light

Introduction

Food industry is constantly developing and with rising new technologies many new products come to market every year. The number of food products in different categories increases, and consumers are becoming more and more confused in their everyday choices. In various activities within Slovene consumers' association (ZPS), we have been testing (www.zps.si) and evaluating (www.potrosnikovzoom.si) products from different food categories on Slovenian market for more than 20 years, and have noticed a significant variability in products quality and nutrition profile. Even though nutrition labelling is mandatory and consumers have an option to choose, they are not well educated and empowered to distinguish the difference between similar products, based on their ingredients and nutrition table. To support informed choice, ZPS uses different strategies, including recently upgraded "Veš kaj ješ" (Do you know what you eat) mobile application (VKJ app) and www.veskajjes.si web page, that are especially developed for younger consumers.

Nutrition labelling

Nutrition labelling is regulated with Regulation (EU) No 1169/2011 on the provision of food information to consumers and is mandatory for majority of prepacked products in all European countries since 2016. Information on products label acts as it's ID and enables consumers to differ between products based on their energy value and macronutrient content, beside other information such as ingredients, products origin etc.

Nutrition labelling as a tool to promote healthy eating

Nutrition labelling may be an effective approach to empowering consumers in choosing healthier products (Cecchini et al., 2016). It reduces consumer dietary intake of selected nutrients and influences industry practices to reduce product contents of sugar, sodium and artificial trans-fat (Shangguan et al., 2019). Using food labels is associated with healthier diets and should continue to be promoted through policies and education programs (Anatasiou et al, 2019). Cristoph et al. (2017) did a population-based survey among young adults (N=1475) and found that while nutrition label use was cross-sectionally associated with markers of better dietary quality, only just over a third of participants surveyed used labels frequently. Those who were female, younger, had higher education and income, were overweight, physically active, and prepared food regularly at home reported more frequent label usage. There is a need to educate all consumers with focus on specific target groups, and provide them with an easy to use and informative tool to help them understand the importance of nutrition composition and reading labels.

Many studies show that use of interpretive labels, as traffic light scheme, may be even more effective than standard "back of pack" nutrition table (Cecchini et al., 2016, Dawn et al., 2015), and may help the consumers to notice, read

and understand the nutrition composition of food. This was also shown with our online survey in 2016.

Online questionnaire was published on our website (www.zps.si) and anonymously responded by 1063 consumers. Consumers were asked about their purchasing decisions and to compare different products based on their ingredients and nutrition value, challenging them with different information presented (product's front of pack picture, nutrition table with the list of ingredients and traffic light profiling). Front of pack information together with nutrition table and list of ingredients are usually read by 71.9 % respondents. Buying decision is mostly influenced by product's price, ingredients (35.4 %), origin and place of manufacturing (29.3 %). Nutrition information is considered important by only 9.8 % of respondents. Consumers responded correctly when guessing on the amount of sugar (low, medium, high) in 3 different cereal products presented only by picture, but for the amount of fats and saturated fatty acids it was harder to guess. Even with the help of nutrition table they were not able to correctly evaluate these values. When traffic light nutrition profile was presented the responses were correct (ZPS, 2017).

Traffic light profiling

ZPS has developed a traffic light profiling scheme based on UK traffic light label developed by Food Standards Agency (FSA, 2007). It uses the same colours and presentation, but the limits are adapted to Slovenian situation. Limits are separated for food and drink, and stricter for the last, since sugar sweetened beverages are one of children's main sources of sugar (Fidler Mis et al., 2012). Limits are presented in Table 1.

Table 1: Limits for Slovenian Traffic light profiling scheme (ZPS)

Nutrients (g/100 g)	*Green (✓)*		*Amber (o)*		*Red (x)*	
	Food	*Drink*	*Food*	*Drink*	*Food*	*Drink*
Fat	3	1,5	3-20	1,5-10,0	20	10
Saturated fatty acids	1	0,75	1-5	0,75-2,5	5	2,5
Sugar	5	2,5	5-15	2,5-6,3	15	6,3
Salt	0,3	0,3	0,3-1,5	0,3-1,5	1,5	1,5
Dietary fiber	6	/	3-6	/	3	/

Traffic light profiling scheme colours numbers in red, amber or green based on the amount of nutrient on 100 grams of product. Red colour indicates the amount is high, meaning it is fine to eat this food occasionally or as a treat, but think about how often you choose it and how much do you eat it. When nutrients are coloured in amber it means product is an "OK" choice, although going for green is even better. And green colour means the amount is low and defines product as the healthiest choice (FSA, 2007).

Since colour coded information is not mandatory, not many producers choose to label their products in such schemes. That is why we have developed an application that helps consumers make more informed everyday choices with colouring nutrition information in traffic light colours.

"Veš kaj ješ?" application

The mobile VKJ app'translates' the numerical nutrition declaration into simplified, at-glance, coloured information on how much sugar, fat, saturated fatty acids and salt is in food and beverage by scanning the barcode on the package. As such, it makes the healthy food choice easier.

Development

First mobile VKJ app was already developed in 2014. It was well excepted among consumers and had more than 35.000 downloads. Nutrient values were shown in traffic light colours, but needed to be manually transcripted by the consumer from the package to the software. Since this process was time consuming, the application needed an upgrade. In 2017 we have joined a project "Deklaracija= Informacija" lead by Nutrition Institute (NUTRIS) and in collaboration with Jožef Stefan Institute (IJS). The project was supported by the Ministry of Health under "Dober tek" programme and resulted in an upgraded application under the same name "Veš kaj ješ". IJS provided the technical development of the application and a link to the database with information over 20,000 foods that were collected in many different previous projects at NUTRIS. Until now we have already had over 50.000 downloads.

Communication

Since young people are highly computer literate the VKJ app is a perfect solution for them, providing simple, at-a-glance and easily understandable information. With integrated and targeted, group-tailored activities, we have built unified communication messages to influence nutrition decisions for healthy habits among empowered, responsible consumers of the future.

How it is used?

Mobile VKJ app enables users to scan barcode of pre-packaged food/beverage and get an energy value and traffic light evaluation of nutrition profile. It enables direct comparison and sorting of similar products by chosen nutrients. There are also other user-friendly functions such as favourites, last scanned, manual calculator for nutrition value, sending new food items to database, comparing nutrition label of foods in categories etc. We have not even forgotten about colour blinded users: beside colour there are also icons: x-red/for high, o-amber/for moderate and ✓-green/for low, for the value of each nutrient.

Users of mobile app are not only passive receivers; they can actively participate in creating and updating the database for other users through crowd-sourcing. Beside constant integration of new products, the application will even further be upgraded with new features in the future.

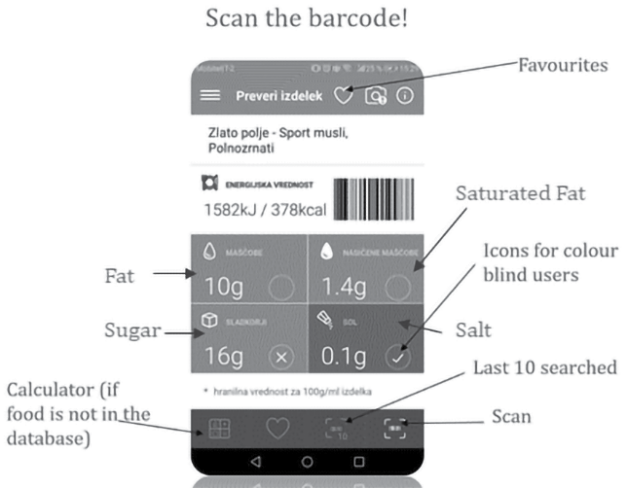

Figure 1: Application screen and pointed features that help consumers choose the healthiest product.

Conclusion

Increased use of mobile VKJ app with a simplified traffic light system for choosing healthier options, may have an impact on purchasing decisions (young consumers and their parents) and consequently also on the food industry to reformulate the existing products by changing the nutrition profile. Healthier choices lead to healthier lives, which positively impacts negative trends also in childhood obesity. Slovenia is one of the three countries in the EU where we can see a decrease in the trend of childhood overweight and obesity between 2010 and 2014 for 15-year-olds (by 10%). We believe that beside other actions, our initiative including app development has helped young consumers (but also their parents) with informed (and better) choices and will help even more in the future.

References

ANASTASIOU, K., MILLER, M., DICKINSON, K., 2019. The relationship between food label use and dietary intake in adults: A systematic review. Appetite, vol. 138, pp. 280–291.

CECCHINI, M., WARIN, L., 2016. Impact of food labelling systems on food choices and eating behaviours: a systematic review and meta-analysis of randomized studies. Obesity Reviews, vol. 17, no. 3, pp. 201–210.

CHRISTOPH, M.J., LARSON, N.I., LASKA, M.N., NEUMARK-SZTAINER, D., 2017. Nutrition Facts Use by Young Adults: Predictors, Information Sought, and Relation to Dietary Intake. The FASEB Journal, vol. 31, no. 1_ supplement, pp. 30.1-30.1.

DOWNS, J.S., WISDOM, J., LOEWENSTEIN, G., 2015. Helping Consumers Use Nutrition Information: Effects of Format and Presentation. American Journal of Health Economics, vol. 1, no. 3, pp. 326–344.

Front of pack nutritional signpost labelling technical guidance, 2007. Food Standards Agency, no 1, pp. 12.

MACHIN, L., ASCHEMANN-WITZEL, J., ROSA CURUTCHET, M., GIMENEZ, A., ARES, G., 2018. Does front-of-pack nutrition information improve consumer ability to make healthful choices? Performance of warnings and the traffic light system in a simulated shopping experiment. Appetite, vol. 121, pp. 55–62.

MEDNARODNI INŠTITUT ZA POTROŠNIŠKE RAZISKAVE (MIPOR). 2019. *Potrošnikov zoom* [online]. [viewed 15 june 2019] Available from: www.zoom.si

MIS, N.F., KOBE, H., ŠTIMEC, M., 2012. Dietary Intake of Macro- and Micronutrients in Slovenian Adolescents: Comparison with Reference Values. Annals of Nutrition and Metabolism, vol. 61, no. 4, pp. 305–313.

ReNPPTDZ - Resolucija o nacionalnem programu prehrane in telesne dejavnosti za zdravje 2015-2025, 2015. Official gazette of the Republic of Slovenia, no. 25/58, pp. 5728-5729.

SHANGGUAN, S., AFSHIN, A., SHULKIN, M., MA, W., MARSDEN, D., SMITH, J., SAHEB-KASHAF, M., SHI, P., MICHA, R., IMAMURA, F., MOZAFFARIAN, D., 2019. A Meta-Analysis of Food Labelling Effects on Consumer Diet Behaviors and Industry Practices. American Journal of Preventive Medicine, vol. 56, no. 2, pp. 300–314.

Uredba (EU) št. 1169/2011 Evropskega parlamenta in Sveta z dne 25. oktobra 2011 o zagotavljanju informacij o živilih potrošnikom, spremembah uredb (ES) št. 1924/2006 in (ES) št. 1925/2006 Evropskega parlamenta in Sveta ter razveljavitvi Direktive Komisije 87/250/EGS, Direktive Sveta 90/496/EGS, Direktive Komisije 1999/10/ES, Direktive 2000/13/ES Evropskega parlamenta in Sveta, direktiv Komisije 2002/67/ES in 2008/5/ES in Uredbe Komisije (ES) št. 608/2004, 2011. Official Journal of the European Union, vol. 304, no. 54, pp. 1-63.

WORLD HEALTH ORGANISATION, 2014. *EU Action Plan on Childhood Obesity 2014-2020*. Geneva, World health organisation: pp.68

ZVEZA POTROŠNIKOV SLOVENIJE (ZPS), 2017. Veš, kaj ješ?! [online]. [viewed 15 june 2019]. Available from: https://www.zps.si/index.php/hrana-in-pijaa-topmenu-327/oznaevanje-ivil-topmenu-328/8742-ves-kaj-jes-11-12-2017

ZVEZA POTROŠNIKOV SLOVENIJE (ZPS), 2019. [online] [viewed 15 June 2019] Available from: www.zps.si

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