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ORIGINAL PAPER

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The Effectiveness of Leaflets and Posters as a Health Education Method

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ABSTRACT

Introduction: Health education is a process of acquiring knowledge and skills in order to improve the health of the individual and the community. It is considered the most effective, most economical and most rational aspect of health care and health culture. **Aim.** To provide data on the effectiveness of printed health-educational materials. **Methods.** This is a quantitative, applied, descriptive-analytical study. According to the type of research, it presents a public health evaluation manipulative study with triple testing. The research was conducted in elementary schools in the Zenica-Doboj Canton. The total number of students participating in the research is divided into groups: examined, control group. The research consisted of four phases. The research tool is a modified questionnaire The Health Behavior in School-aged Children (HBSC) with 38 questions, 8 modules. **Results.** The total number of respondents was 120. The method of distribution of health-educational posters shows a lower but still present statistical significance ($p < 0.05$) in relation to the acquired knowledge and a change in attitudes between the conducted surveys at different time points. There is no statistically significant change ($p > 0.05$) in the level of knowledge and attitudes using leaflets between conducted surveys at three different times. In the control group without education, there was a low statistical significance ($p < 0.05$) in terms of changing the level of knowledge and attitudes. **Conclusion.** The distribution of health-educational posters is recommended in situations where it is necessary to reach a wide audience for a long period of time, if the site of the poster is protected. According to this study, there is no evidence that the leaflet distribution method should be used when it comes to the promotion of healthy lifestyles among healthy children. Alternative methods and ways of health education need to be identified.

Keywords: health education, HBSC, healthy lifestyles, public health.

1. INTRODUCTION

Health education is a process of acquiring knowledge and skills in order to improve the health of the individual and the community. It is considered the most effective, most economical and most rational aspect of health care and health culture. The goals of health education are to expand knowledge of one's own health, change attitudes and apply a useful daily practice of a healthy life (1). Educational methods in the health care of the population need to be applied equally with all other methods of health promotion. When health problems are more complex, the methods of health education have to be more numerous and subtle, and therefore more necessary in modern health care (2). Didactic methods include medical lectures, health films, leaflets, posters, radio, television, multimedia advertising. In the use of didactic methods in health education, the starting point is that the person is an "empty vessel" that needs to be "filled" with knowledge and that it will integrate, interpret, reproduce and, accordingly, adopt and apply in practice (1).

Morrow in 2001 states that in the UK health promotion specialists have greatly realized that health-related behaviors are closely linked to the social environment and community (3). Singh and associates in 2016 state that there is a significant difference in the impact of health education using integrated leaflet distribution models, demonstrations and the use of audio-visual devices, compared to isolated leaflet distribution (4). Gupta and associates in 2016 on a sample of students come to the data that students prefer audio-visual media and Power Point presentations, rather than leaflets (5).

2. AIM

The purpose of this research is to provide data on the effectiveness of printed health-educational materials, posters and leaflets, as a method of health education. The aim of the research was to evaluate changes in the knowledge and attitudes of school children who received printed health-educational materials on healthy lifestyles.

3. METHODS

This is a quantitative, applied, descriptive-analytical study. According to the type of research, it presents a public health evaluation manipulative study with triple testing (determining the condition at three time points).

The research was conducted in elementary schools in the Zenica-Doboj Canton. The total number of students participating in the research is divided into the following groups: examined group - A, control group (without education) - B. Group A is further divided into the following subgroups: distribution of health education posters - A1, distribution of health education leaflets - A2.

The research consisted of four phases: a) The first survey about healthy lifestyles to analyze and determine the level of student's knowledge and attitudes before participating in a health education program; b) Implementing a health-educational program in relation to healthy lifestyles by the method of distribution of health-educational posters and leaflets, depending on the group of subjects; c) The second survey about healthy lifestyles to determine the level of knowledge and attitudes of the same students as first time a day after participating in a health education program; the control group of the subjects did not have this phase of the study; d) The final survey in both group A and group B to determine which of the health education methods leaves the longest cognitive information, attitudes and eventual behavioral changes; The final survey was conducted a month after health education program.

The research tool is a modified questionnaire The Health Behavior in School-aged Children (HBSC), conducted by the United States Department of Health and Human Services, the National Institute of Health, with over 200,000 young people in over 40 countries around the world. The questionnaire is anonymous. The questionnaire contains 38 questions distributed in 8 modules. Research instrument modules are based on general information and questions about the knowledge and attitudes of school children about healthy lifestyles, such as: nutrition and physical activity, hygiene and health, social negative behavior and school safety, life skills and communication, nicotine – alcohol – drugs, reproductive health. Questions in the questionnaire are: questions with a determined choice, questions that define the frequency, questions that offer a list of answers and a scale of priorities (descriptive grades that replace grades 1 to 5), and one open-type question.

The theme of health education processed in the health-educational leaflet and on the poster on the one hand and questions from the questionnaire on the other hand depended on one another – they are in agreement – so they were created simultaneously.

The criteria for exclusion from the research were as follows: a) students who undergo intensive education on

healthy lifestyles due to their own illness; b) students with whom it is not possible to establish adequate cooperation (intellectual, speech problems); c) students for whom the parents gave written act to refuse participation in the research. The approval of the Pedagogical institute Zenica (Ministry of education, science, culture and sports of Zenica-Doboj Canton) was obtained.

The tests used for statistical processing are: The Cochran's Q test is suitable for comparing the results at three points of time when it comes to dichotomous variables; The McNemar's test is suitable for comparing the results of a group observed at two points of time (in a control, B group, without education). Questions in which the students did not participate in each survey and questions that the students did not answer were not taken into account at any point in time, and were presented as null data. Standard software statistical tools have been used (Microsoft Access, Microsoft Excel, and Microsoft Excel Plugin – Real Statistics).

4. RESULTS

The total number of respondents was 120; 63 (52.5%) boys and 57 (47.5%) girls. The age structure of the subjects ranged from 10 to 14 years of age. The most common year of birth was 2005; 33 (52.38%) boys and 26 (45.61%) girls. Table 1 shows the distribution of respondents by groups / methods of health education and time points of the survey.

Selection of some questions from the questionnaire

A total of 37 (58.73%) boys and 36 (63.15%) girls believe their body weight is about good. A total of 9 (14.28%) boys think their body is skinny. A total of 42 (35%) students answered that they were physically active every day during the last week at least 60 minutes, while 36 (30%) students had such physical activity for 1-2 days a week. Boys are more often physically active every day. A total of 74 (61.66%) students answered that they had breakfast every day. The difference is shown: 15 (23.8%) boys take breakfast

Group	Method	Number of students by time points of survey		
		The first round of survey	The second round of survey	The third round of survey
A1	Poster	31	31	31
A2	Leaflet	37	37	37
B	Control group	52	no	52
Total	120	68	120	

Table 1. Distribution of students by groups / methods of health education and time points of the survey

Time point of survey	Number (%) of correct answers		
	Poster	Leaflet	Control group
The first round of survey	1076 (58,07)	1376 (56,34)	1487 (45,98)
The second round of survey	1150 (62,06)	1377 (56,39)	no
The third round of survey	1163 (62,76)	1364 (55,86)	1569 (48,52)
p value	< 0,01	> 0,05	< 0,01

Table 2. Changes in the responses of students

Change of knowledge and attitudes	Poster		Leaflet		Control group
	1. → 2. survey	2. → 3. survey	1. → 2. survey	2. → 3. survey	1. → 2. survey
Number (%) of students who changed their knowledge and attitudes positively	212 (11,44)	218 (11,76)	2 (0,08)	7 (0,28)	348 (10,76)
Number (%) of students who changed their knowledge and attitudes negatively	138 (7,44)	205 (11,06)	1 (0,04)	20 (0,81)	266 (8,22)
Number (%) of students whose knowledge and attitudes remained the same	938 (50,62)	945 (50,99)	1375 (56,30)	1357 (55,56)	1221 (37,75)
Number (%) of students who did not know but did not even learn	565 (30,49)	485 (26,17)	1064 (43,57)	1058 (43,32)	1399 (43,25)
Total (%)	1853 (100)	1853 (100)	2442 (100)	2442 (100)	3234 (100)

Table 3. Change of knowledge and attitudes of students between surveys at different time points

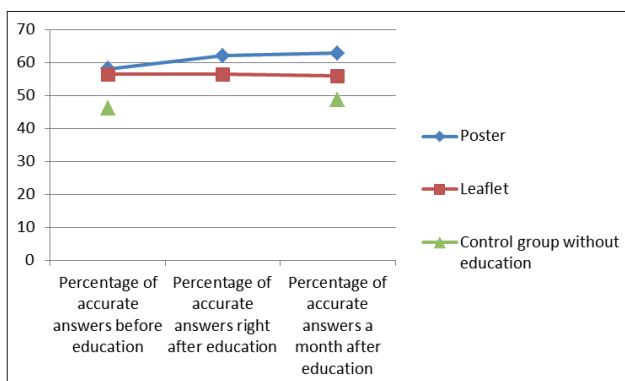


Figure 1. Change of knowledge and attitudes of students between surveys at different time points

1-2 times a week, and this is claimed by only 3 (5.3%) girls. In total 81 (67.5%) students (more often boys) believe that friends on social networks are their real friends, or they are undecided on this matter.

Evaluation of the effectiveness of health education methods

The total number of valid answers in the group of students using posters as a method of health education was 1853. The calculated Q value was 8.620513, so the value of p was 0.003324 ($p < 0.05$). The method of distribution of health-educational posters shows a somewhat lower but still present statistical significance in relation to the acquired knowledge and a change in attitudes between the conducted surveys at different time points. In the first round of the survey students gave 58.07% of the correct answers to questions from the questionnaire. After the poster distribution was carried out, the percentage of correct answers increased to 62.06%, and a month later to 62.76% (Table 2, Table 3, Graph 1).

The total number of valid responses in the group of students using the health-education leaflet was 2442. The calculated Q value was 1, so the p value was 0.317311 ($p > 0.05$). There is no statistically significant change in the level of knowledge and attitudes between conducted surveys at three different times. In the first round of the survey students gave 56.34% of the correct answers to the questions from the questionnaire. After the distribution of leaflets, the percentage of the correct answers increased negligibly to 56.39%, and a month later the students answered correctly to 55.86% of the questions (Table 2, Table 3, Chart 1).

The total number of valid responses in the control group

of the subjects was 3234. The calculated hi-square value was 10.685 ($p < 0.05$). In the control group without education, there was a low statistical significance in terms of changing the level of knowledge and the change of attitudes between the surveys at two different times. In the first survey, respondents gave 45.98% of the correct answers to questions from the questionnaire, and after a month without any education the percentage of correct answers increased slightly to 48.52% (Table 2, Table 3, Graph 1).

5. DISCUSSION

The HBSC study in Moldova from 2014 presents the results of 6642 respondents in age of 11, 13 and 15 (6). In Europe, 15-year-old girls consider themselves overweight (7, 8). Only 23% of adolescents in Europe carry out minimum physical activity of 60 minutes per day, and 4.6% do not have physical activity on a daily basis (7, 9). In Europe, only 60% of the respondents have breakfast every day, and every tenth jumps out the breakfast. A total of 13.1% of girls do not take breakfast in working days (8, 10). The frequency of electronic media contacts shows a significant increase of over 15% between 11 and 15 years of age in Europe (more often among girls and rich families) (8, 11).

In other surveys, most respondents answered that they receive entertainment information via television (72%), followed by counseling (14%), and educational information (14%). A total of 74% of respondents prefer to watch educational television series, 26% movies. Television could be considered to be method by which a wide range of audiences can be reached, if health-educational content were incorporated into other television content (12).

The reason for increasing knowledge and positively changing attitudes in applying posters in this research can be the simplicity of providing information on the poster. The poster stays in the long term in the place where it is set up, which allows for a long-term retention of knowledge and positive attitudes at approximately the same level as after the education. In the UK in 2001, research on health behavior of population was conducted, and it was concluded that it is closely related to the social environment and the community (3).

The reason for the fact that there is no increase in knowledge and a change in the attitude after the distribution of leaflets in this research can be the overload with the distribution of leaflets of various kinds, from marketing to health education. There is even a decrease in the

knowledge of students after the distribution of leaflets. The overloading with this type of printed material could be a demotivating factor for learning. The knowledge and attitudes are changed in an extremely small and insignificant number of questions, between the first and second survey, and between the second and third survey. In most issues, knowledge remained the same, and there were also a large number of students who did not have prior knowledge but did not even learn. Health education work does not provide significant results regarding the acquired knowledge of students by the method of distribution of health-educational leaflets. According to this study, there is no evidence that the leaflets distribution method should be used when it comes to promotion of health and healthy lifestyles among healthy children, which are not even interested in such knowledge by their nature. However, it can be used in situations where it is necessary to reach a wide audience, the information being presented is not particularly important, or it is sufficient to be in the form of a notice (as a notice for a lecture, a workshop, a brief information about the results achieved in some work etc.). Different from healthy children, the method of distributing health-education leaflets may have potential in work with newly discovered cases of chronic mass non-communicable diseases when individuals are most motivated to learn about their illness (13). In the research of Singh and associates, the distribution of leaflets with the simultaneous use of practical demonstrations and audio-visual means in health education have much better results than the isolated distribution of printed materials, leaflets (4). In a study carried out by Gupta and associates among the student population, it was concluded that students consider PowerPoint presentations and audio-visual means as incomparably more acceptable methods of acquiring knowledge, opposed to printed materials, leaflets (5).

The reason for increasing the percentage of accurate responses in the control group may be the fact that students were interested in this topic after the first survey, but also that they listened some topics in the field of healthy lifestyles in other teaching subjects in schools (e.g. "Physical and health education", "My environment" and similar teaching subjects). The essence of health education is in long-term knowledge retention and changing attitudes. People who are not health care workers as the most common source of health information suggest conversations with friends (14). Among health workers, a common source of information is other health professional, but also the media. Therefore, health workers are more inclined to use health knowledge sources that are based on greater expertise, while people who are not health care workers more often use informal sources of information (friends) (14). Comparing with the results of previous researches, the most dominant source of health information in the wider public is mass media (television, internet, journals), while health professionals, friends and family members are equally important sources of knowledge (15, 16). Also, the results are similar to the results from a survey conducted on the nursing faculty, where the main source of information is the healthcare worker, while the knowledge through the thematic public tribunes on health is least represented (17, 18).

"De-medicalization" of health education in the activities

of the Institute for Health Protection Zaječar has shown that physicians are not the best health educators, for the simple reason that they are preoccupied with the phenomenon of disease (19). In 2000, the research was carried out in the state of Illinois, USA. As many as 81% of respondents consider it is necessary to introduce health education into schools as a separate teaching subject, and 83% think that the school should have a nurse in their team (20).

Health education is often an unheard and unjustifiably neglected health care measure, both by the population and by health professionals of all profiles and levels of education. Health education has unlimited possibilities and an unmatched number of different methods and a combination of methods for work (21).

According to this research, the distribution of health-educational posters is recommended in situations where it is necessary to reach a wide audience for a long period of time, if the site of the poster is protected, although this is not a guarantee that the increase in knowledge will be high.

The distribution of health-educational leaflets does not give significant results regarding the acquired knowledge of students. According to this study, there is no evidence that the leaflet distribution method should be used when it comes to the promotion of health and healthy lifestyles among healthy children, which, by their nature, are not even motivated for this kind of knowing.

Alternative health education methods need to be identified. Experts in nursing and health sciences in the field of health education have all the possibilities for professional realization.

6. CONCLUSION

Health education of the population in general, and especially for children, through the activity of specific preventive-promotional health care for young people in schools and faculties, should be given priority in order to influence the more positive and healthy lifestyles of the population, thereby reducing the negative health outcomes and high costs of health care (19).

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REFERENCES

1. Mašić I, Toromanović S, Smajkić A. Health education of the population. In: Mašić I. (ed.). Social medicine with the basics of community health care and polyvalent patronage. Sarajevo: Avicena, 2008: 277-92.
2. Ibrahimagić-Šeper L. Promotion of health and disease prevention. In: Ibrahimagić-Šeper L. et al. Promotion of health and disease prevention. Zenica: University of Zenica, 2008: 75-120.
3. Morrow V. Using qualitative methods to elicit young people's perspectives on their environments: some ideas for community health initiatives. Health education rearsrch. 2001; 16: 255-268.
4. Singh N, Ramakrishnan TS, Khera A, Singh G. Impact evaluation of two methods of dental health education among children of a primary school in rural India. Medical Journal

- of Dr. D.Y. Patil University. 2016; 9: 66-71.
5. Gupta R, Ingle NA, Kaur N, Ingle E, Charania Z. Evaluation of the impact of different health education methods in undergraduate students of dental college, Mathura City. *Journal of advanced oral research*. 2016; 7.
 6. Lesco G. Behavioral and social determinants of adolescent health: Summary report of the health behaviors in school-aged children study in the Republic of Moldova. Chisinau, 2015.
 7. World Health Organization. A snapshot of the health of young people in Europe: A report prepared for the European Commission conference on youth health. Brussels, Belgium, 2009.
 8. Currie C, Zanotti C, Morgan A, Currie D, Looze M, Roberts C, Samdal O, Smith O, Barnekow V. et al. (eds.). Social determinants of health and well-being among young people. Health behaviour in school-aged children (HBSC) study: International report from the 2009/2010 survey. Copenhagen: WHO Regional Office for Europe, 2012.
 9. Corning AF. et al. Preventing the development of body issues in adolescent girls through intervention with their mothers. *Body Image* 2010; 7: 289-295.
 10. David-Ferdon C, Hertz MF. Electronic media, violence, and adolescents: an emerging public health problem. *Journal of Adolescent Health*. 2007; 41: 1-5.
 11. Coulton C, Irwin M. Parental and community level correlates of participation in out-of-school activities among children living in low income neighborhoods. *Children and Youth Services Review* 2009; 31: 300-308.
 12. Vukić T, Youens I. Television program as a teaching tool in acquiring elementary school media competencies. *Medij istraž.* 2015; 21: 79-100.
 13. Mahmutović N, Bešliagić Z. Written health-promotional material in family medicine. Book of Abstracts of the Third Session of Public Health Specialists FB&H. Bihać, 2017.
 14. Drašković V. Globalization in the media mirror. *Media dialogues* 2009; 2: 119-127.
 15. Varoščić M. Sources of knowledge in the acquisition of health culture. Rijeka: Publishing Center Rijeka, 1991.
 16. Barath A. Culture, education and health. Zagreb: High Medical School, Department of Health Psychology, 1995.
 17. Maričić-Lučić I, Sindik J. Connection of the acquisition of health information with the demographic characteristics of nursing students. *Medianali*, 2014; 2: 11-15.
 18. Pavlović V, Sindik J, Lenz G, Nadilo B, Saulan S, Šljuka M. Sources of information about health in nursing students in Dubrovnik. *Nurses Education Magazine*. 2014; 11.
 19. Paunović P. Theater, school of health – actors, teachers of health. *Timok Medical Gazette, History of medicine* 2015; 40: 1.
 20. Temple M. Opinions of Illinois Voters About Coordinated School Health Programs. *Journal of School Health*. 2004; 74: 105-107.
 21. Hasanica N. Evaluation of health education methods in the formation of knowledge, attitudes and behaviors of school children towards health. Doctoral dissertation. Faculty of Health Studies, University of Sarajevo, 2017.