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Chapter 6

**HEALTH PROMOTION OF CHILDREN
WITH INTERPROFESSIONAL APPROACH
AND PEER EDUCATION:
HEALTH EDUCATION FOR YOUNG
(Z AND ALPHA) GENERATIONS -
A NOVEL METHODOLOGICAL APPROACH
AND ITS IMPLEMENTATION**

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ABSTRACT

Modern and innovative health education is a complex pedagogical challenge involving numerous scientific fields among others, such as health sciences (nutrition, epidemiology, physiotherapy, health pedagogy, health sociology, etc.), psychology, genetics and epigenetics, and information technology. This approach requires an interprofessional education system and a collaborative implementation, as well as long-term practice.

Health-related attitudes can be modified and supported most effectively at young ages. Young (e.g., Z and Alpha) generations require preferentially methods more appropriate for their age in health promotion programs as well. The aim of the authors is to provide an insight into a relatively novel and interprofessional pedagogical method realized within the framework of peer education. This multilateral activity focuses on knowledge, health behavior, attitudes, experience and motivation of youngsters in connection with health promotion programs and community service work. It is based on the experiences of the authors with 149 peer-educated students from pedagogical and health science faculties, 26 peer helpers from secondary schools and about 3000 children from kindergartens, elementary and secondary schools in Hungary and Transylvania, Romania. In this chapter the authors describe the theory and principal influences of peer education as well as their experiences compared to more traditional teaching methods.

The main point of this pedagogical approach is to involve students (as peer educators) and secondary school students (as peer helpers) together in children and youngsters' health education in the context of a professional tutorial system. These are defined in terms of learning outcomes: cognitive skills (critical, reflective, creative thinking, etc.), methodological skills (time management, problem solving, decision-making, education program planning and implementation, digital skills, etc.), and social skills (cooperation with peers and tutors, interpersonal communication with peers and younger children, teamwork, conflict management and negotiation).

INTRODUCTION

Health indicators are unfavorable in many countries, including Hungary, despite taking positive health policy measures: life expectancy at birth is lagging behind and the number of healthy years of life is very low

compared to that of most advanced countries (World Health Review, 2018).

Based on the morbidity and mortality data many of the diseases could be prevented by a healthy lifestyle through scientifically proven knowledge and appropriate health behaviors. However, there are social groups where adverse health outcomes are associated with inequalities in the access to health care (and health promotion-related programs), with poor health behaviors closely linked to unfavorable social status, and with higher exposure to risk factors (State of Health in EU, 2017). It is a scientifically proven fact that prevention programs can reduce social inequalities in health indicators, helping disadvantaged social groups. In addition, effective and targeted health promotion clearly produces a return on investment with a positive cost-benefit balance at both individual and community levels (Master et al., 2017). This is true even if the availability of economic data of health promotion is rather limited in the international literature (McDaid et al., 2015).

In the postmodern societies, due to the explosion of patient care costs in the 1970s (Ortiz-Ospina and Roser 2019), strengthening and improving primary care became a priority over specialist care. This strategy contributed to the reinforcement of the concept of a new type of public health. The Alma-Ata Declaration and then the consensus documents created at the first international conferences on health promotion in Ottawa, Adelaide, Sundswall, Jakarta, Mexico City set health promotion as a primary goal to preserve health and eliminate inequalities between and within societies.

In addition to the fact that there may be special groups in a given society (such as a significant proportion of the Roma in Middle Europe) that require special care due to their particularly disadvantaged status, the World Health Organization (WHO) has globally highlighted three groups that the community-based approach to health needs to address: children, pregnant women, and the elderly. Children must become one of the main target populations of prevention programs, since prevention at a young age can ensure health promotion and health education to be implemented in a

cost-effective and optimal way. In addition, school health promotion could be an excellent area for reducing social disadvantages.

Peer education, with its many benefits, is one of the most cost-effective approaches to health promotion at both macro and micro societal levels, and therefore globally as well, but especially in countries with scarce human and material resources (Turner et al., 1999). Although this method was present in the field of health care already before the 1960s, mainly in the prevention of infectious diseases, it was used first in the seventies and eighties with the aim of developing and reducing risk behaviors (Turner et al., 1999; Parkin et al., 2000).

The main objective of this chapter is to present a possible method of health promotion based on peer education, based on collaboration across disciplines, levels of education, and a system of quantitative and qualitative measurement of the effectiveness.

EPIGENETICS IN HEALTH AND DISEASE: EDUCATION AS PART OF MENTAL EPIGENETICS

The outburst of genome programs, molecular methodology and bioinformatics elevated the professional and public expectation enormously. However, despite rapid advances in genomic technology and computational biology, our ability to account for phenotypic variation using solely genetic information remains limited for many traits including the complex systems of both health and disease. This has resulted in limited application of genetic data towards preventive and personalized medicine (i.e., in oncology, allergy, cardiovascular diseases, etc.).

Human genetics has been haunted by the mystery of “missing heritability” of most common diseases (Manolio et al, 2009). Although multi-genome studies have discovered over 1,500 variants associated with common diseases and traits, these variants typically appear to explain only a part of the heritability. Specifically, one may estimate that the total heritability implicitly includes rather (i) the gene networks (i.e., genetic interactions – among loci) and (ii) physical, mental and sociological/

environmental (epigenetic) influences (Dupont et al, 2009). The epigenetic factors include maternal influences on the fetus during pregnancy, nutrition, movement activity, hygiene, infections, sleep, stress, abuse and various social effects, such as education, music, social awareness, religious faith, or traditions (Clark et al, 2013, Bakusic et al, 2017, Brigati, 2011, Johnstone, 2010, Toyokawa et al, 2012). Epigenetic modifications result in well-characterized and controlled as well as measurable covalent although reversible modification of the genome i.e., methylation of DNA, methylation, acetylation, phosphorylation of histones, production of regulatory, non-coding RNA, telomere length by telomerase). Nowadays the most acceptable concept in health and disease is that vertical genetic transmission and epigenetic (e.g., environmental) tuning of gene expression mostly prevail together (Kubota, 2016, McGowan, 2008). This view should induce a paradigmatic shift in education and public communication. Education, both scholar and parental ones, seem to be one of the important components of mental epigenetics, affecting the manifestation of inherited features (WHO, 2014). Preferentially in young people, recognition of the reversible feature of epigenetic regulations through education, especially in this sensitive age redirects the attention to the significance of education processes in health and diseases.

THE BASIC HEALTH CONCEPT OF WORLD HEALTH ORGANIZATION AND LEGAL ASPECTS OF HEALTH

“A healthy population is a key factor in achieving social goals” (Gilbert et al, 2010). In this process, schools, as public institutions of education are important arenas and partial moderators reducing social inequalities. Health awareness and health promotion is highly dependent on the wide availability of up-to-date, versatile psychosocial, sociological, and biomedical knowledge (Battams, 2016, Feith et al., 2016), as well as personal motivation of the members of society. Therefore, it is a societies’ shared task and responsibility to have much more emphasis on prevention with the help of advanced health education. As a result, there is an

unavoidable need to refocus the preventive approach with an interprofessional collaboration, i.e., pedagogy and occupational health care. Interprofessional education occurs when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes. Once students understand how to work together, they are better prepared to enter the workplace as proactive members of the collaborative practice team (Gilbert et al., 2010).

The declaration of the “right to health” at international and then state level is one of the rights enshrined in most constitutions the highest level of domestic law.

The complexity of the field of health care includes legal issues as well. Social norms such as moral, religious or even legal standards, though with different emphasis and enforceability, serve as a standard or a protective measure in our everyday life. Obviously, the law is also concerned with health and the development of health consciousness and awareness. Rights to health are inherent parts of the fundamental rights system (Feith, 2019).

Structurally, three concepts of fundamental rights can be identified in relation to health and health care: 1) right to health, 2) concept of health based on patients' rights, and 3) health care based on fundamental rights. The latter is suitable for systemic reconsideration, where fundamental rights can become an important basis for the design, implementation and evaluation of health policy and health programs. It is important to note, however, that both preserving health and the closely related right to health, depend on many other fundamental rights. For example, violation of human dignity (e.g., torture), liberty (e.g., slavery), or self-determination (e.g., traditional practices harmful to health) seriously violate the exercise of this right. It also includes rights, including the right to healthy drinking water, the right to food, and the issue with particular importance to the present subject, the right to education, whose vulnerability is also closely linked to the enforcement of the right to health (WHO 2002).

The commitment to the “right to health” concerns the social liability for developing and maintaining effective health education at many levels of educational systems.

ABOUT PEER EDUCATION AS A PEDAGOGICAL METHOD

Proactive interaction between professionals and individuals of all ages is essential, but future generations, children, and adolescents deserve particular attention in shaping and sustaining the future patterns of healthy living.

The motivation of the target groups to digital world, X, Y, Z, and Alpha generations requires the creation, optimization and widespread distribution of educational materials not only in written format, but with multimedia and internet (e.g., webinars, websites, Facebook, tweeters) and mobile phones.

As a possible pedagogical method, peer education (based on the active interaction between young generations close in age) across educational institutions can be well adapted to the 21st century's generations. Peer education as a teaching method has already been used in ancient Greek society (Gradwohl, Németh, 2019), even though this approach is radically different from of the ones generally applied in 20th century or earlier.

A number of social science theories prove the operability and effectiveness of the peer education method, such as the social (socio-cognitive) learning theory (Bandura, 1977); role theory (Sarbin & Allen, 1968); differential association theory (Sutherland et al., 1960); the concept of subculture (Cohen, 1955); inoculation theory (McGuire, 1968); and innovation diffusion theory (Rogers, 1983). It is very important that in peer education, knowledge, attitudes, and value transfer can influence peer educators as well as increase their self-esteem and influence their social behavior in a positive way. (Klein et al., 1994) In addition, it has the advantage of being a well-applicable or highly cost-effective method for target populations in the public education system and difficult to access. Successful peer education, in addition to improving learning outcomes, can lead to more effective development in the following areas of emotional intelligence: promoting social inclusion and equal opportunities; improving social relationships with peers; improvement, social networking. All of the above are essential for the well-being of children and young people (Elias, 2010; McLoughlin et al., 2012; Osher et al., 2016). However, in the

relevant international literature about health education programs by peer education, the framework of the applied pedagogical methodology, the process of implementation, and the comparative measurement of scientific effectiveness show marked weaknesses (Lukács et al., 2018).

Although a number of health-related prevention programs targeting younger generations has been worked out in recent decades, their effectiveness in many respects is questionable and less based on relevant scientifically proven evidences (Lukács et al., 2018). The obvious disadvantage of these programs is that a large proportion of them still does not take into account the completely different, innovative knowledge transfer methodological needs of the Z and Alpha generations. According to a non-representative survey in Hungary, the majority of high school health promotion programs are still based on an otherwise rather ineffective, frontal-type education methodology without the/inter/active and explorative presence of the students (Feith et al., 2016). One can also declare that the school scene is still an underutilized opportunity for health promotion (even if to different extents in different countries), while it could be one of the breakthroughs of the complex health promotion combined with more personalized school atmosphere. (Járomi and Vitrai 2017). In addition, these school programs would have unequivocal and direct practical benefits beyond the strictly related health consciousness and salubrity promotion.

After all, by giving one specific example of hygiene programs, good hand hygiene behavior can be taught efficiently and permanently to children in school environment (Lehotsky, 2017), and beyond avoiding the negative effects of infections, the program affects the entire school classroom (as fewer children catch infectious diseases), reduces the extra work in helping the missing students to catch up with their peers, and not even the parent is required to be absent from work in order to take care of a sick child (Randle et al., 2013, Wang et al., 2017). Thus, the most effective, simplest, and cheapest means of controlling infections could be prevention programs in the schools, which are easy to implement in a school environment, and assist in mastering proper hand hygiene techniques.

YOUTH HEALTH EDUCATION PROGRAM (STAN¹): A PEDAGOGICAL REFLECTION OF 4P MEDICINE

Apparently, the STAN¹ initiative can be closely paralleled with the so-called 4P medicine (Flores et al., 2013), since it is based on **p**revention, **p**rediction, **p**ersonalization and **p**articipatory approach through a well-characterized peer education and interprofessional pedagogy.

The STAN¹ is primarily based on the pedagogical method of peer education by a new approach whereby students (peer educators) in higher education in pedagogical and health sciences progressively transfer their knowledge to primary and secondary education with the help of peer helpers in secondary education. The peer educator training process, as well as the health promotion program itself, seeks to build on the active role of students and target populations (student-centered learning), rather than the traditional teacher-centered knowledge transfer method, thereby engaging them in the learning process. During the STAN¹ school health promotion procedure, knowledge transfer and health-related attitudes are developed in an interesting, innovative and interactive way (using gamification techniques) developed by 3-4 student groups. The role that more experienced people (peer educators) play in attracting younger children to the process of peer education reinforces the effectiveness of programs and has a positive impact on peer educators themselves (Klein et al., 1994).

Teachers and health workers play an extremely important role in prevention and health-related education in the kindergartens and school environments; therefore, it is crucial to develop a strong and effective health promotion approach in students of pedagogy and health sciences. Accordingly, the key objective of the program is to place greater emphasis on the transfer of true and practice-oriented health promotion training to the curricula of students both in the pedagogical and medical sciences,

¹ The Hungarian version of this program is the “TANTUdSZ”, the word is an acronym, which includes the beginning of the following words, in Hungarian: Study, Teach, Understand. This program was funded by the Content Pedagogy Research Program of the Hungarian Academy of Sciences.

since an effective health promotion program cannot be imagined without either of the fields of pedagogy or health science.

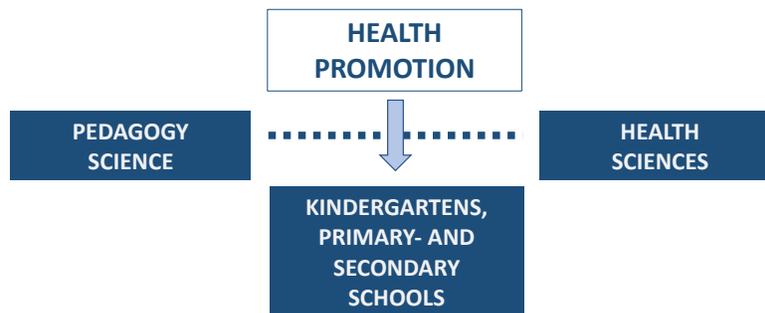


Figure 1. Students studying pedagogy as well as those of health sciences work together in health education at multiple levels of education system.

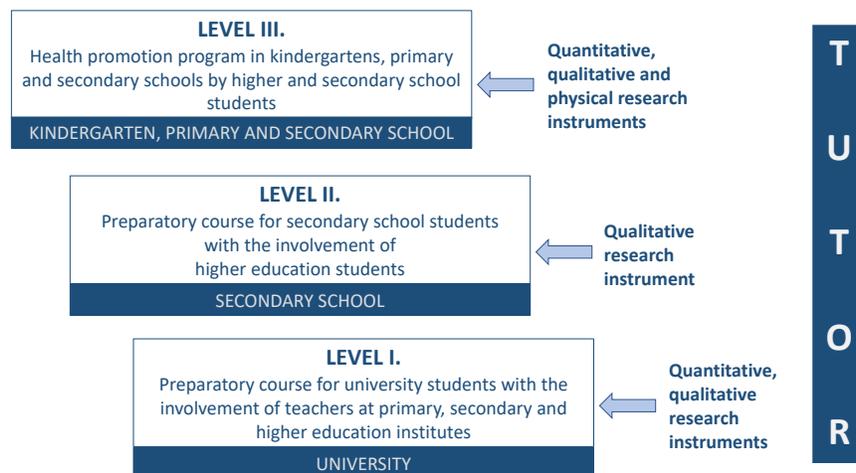


Figure 2. Three levels of the interprofessional and peer education system in STAnD program.

The STAnD may not only serve as a bridge between pedagogical and health care education but it aims at creating both vertical and horizontal collaborations: 1) collaboration of universities with kindergartens, primary and secondary schools; 2) collaborations between sciences (principally health sciences, pedagogy, sociology, and psychology); 3) collaborations

between university level programs, faculties and universities. Alongside this concept, students in the two specialties are trained together, and even school health promotion programs are implemented together (Figure 1).

The STAnD initiative takes place on three consecutive, yet interdependent levels of the education and research system (Figure 2). In the practice of the program, the preparatory level is a 24-lesson, registered, elective course where professional experts in the areas of pedagogy and health sciences educate future peer educator students. This involves practice-oriented health and pedagogical training appropriate to the given health development topic and the target group, complemented by training in communication, conflict management, and project management skills.

As far as the levels are concerned, the first one is organized at university levels for students of higher education (future peer educators) by professional experts of the various health topics (fluid consumption, hand hygiene, basic life support, mental health, etc.). The second is carried out among secondary students (future peer helpers) with the contribution of higher education students, and they prepare together for peer education in elementary schools or kindergartens (third level), where the educational practice is further exploited by them. The last two educational trainings are closely controlled (and revised, if necessary) by expert tutors.

MEASUREMENT SYSTEM OF STAND PROGRAM

Studying the relevant international literature, it can be stated that contemporary health promotion programs for children and adolescents strive to measure some level of effectiveness in their prevention program. However, unfortunately most teams measure only the number of participants and satisfaction with the program. In addition, programs that do, however, as mentioned above, lack a clear methodological framework for impact assessment, a precise description of the pedagogical methodology used, and very few validated measurement tools are available (Lukács J. et al., 2018).

It is for this reason that the STAnD Program aims to develop and make available to the scientific community a precise scientific effectiveness measurement system for each prevention program. Since this is a pilot project, peer educator training (including changes in the motivations and attitudes of peer educators and peer assistant high school students, the lovability of the program), and the effectiveness of the school health promotion program (including the program liking index) are constantly being examined with complex measurements to continually refine the concept based on the results obtained. Thus, the two pillars of our measurement system are (1) the examination of the preparatory course for peer education and (2) the measurement of the effectiveness of peer health promotion programs.

In our scientific program, the results on the effectiveness of the education and training initiative, tested both through quantitative (questionnaire-based), qualitative (focus group interviews, reflection diaries), and physical research methods (e.g., by fluorescence-based scanning measuring the effectiveness of hand washing procedure) are measurable in terms of knowledge, health behaviors and attitudes. Focus group surveys of the participating tutors and the targeted analysis of the reflection diaries of the higher education students extend the possibilities of interpreting the research results and occasional failures, similarly to the self-reflection development of the peer educators and the positive interventions of peer education (Feith et al., 2018a; Feith et al., 2018b).

The measurement approach of the STAnD Health Promotion Program has been developed in accordance with the scientific criteria for impact assessments. The peer educators and peer tutors are measured at the start and at the end of the course, while students in the school health promotion program are measured three times: before the health promotion program, immediately after the intervention (supplemented with program satisfaction questions) and 4 months after the intervention. The third measurement aims to explore the extent of the long term impact the program has on knowledge, health behaviors and attitudes, and to see which points need to be better focused in subsequent programs. In order to validate the impact assessment, we also use control groups in school health

promotion programs who do not participate in the health promotion program and who are tested only at the start and 3-4 months later.

During school programs, peer educators, peers, and students participating in the health promotion program mutually assess each other's role in the program. With the help of reflection diaries, peer tutors and peer facilitators assess, both peer educators' and students' willingness of collaboration. Furthermore, the students participating in the intervention program assess the work and preparedness of their peer educators and peers with the help of a questionnaire. Similarly, peer educators, peer facilitators (in reflection diaries) and expert tutors assisting them during the preparation and school programs (with focus group studies) evaluate each other's work, helpfulness, and cooperation.

One of the major drawbacks of current peer education programs is the lack of accurate description of the pedagogical methods used, without which efficiency cannot be properly understood (Southgate et al., 2016). Therefore, during the STAnD Program, small groups of 3 to 5 prepare very detailed, multi-dimensional action plans for the 4-hour Health Promotion Program (including parenting methods, student work forms, tools to implement the program) based on pre-defined content and form requirements. However, in the processing of the topic, the formulation of tasks and the choice of games, the "methodological freedom" of the teams always prevails, that is, along with the fixed health pedagogical goals and tasks, the peer educator teams invent their own methods of knowledge transfer and sensitization. Prior to each school program, peer educators or tutors contact the school class teacher to learn about the special needs of the children in the class or the preconditions needed to work on a given prevention topic (previous health promotion program, preliminary studies related to the topic, etc.).

IMPLEMENTATION OF STAND

According to our findings, the same efficiency scores can be seen in increasing the sense of responsibility of the peer educators and peer

helpers, as well as in the motivation of knowledge transfer. All of these go significantly beyond the teacher-oriented educational disentanglement that is otherwise predominant in many world-wide health promotion programs. Thus, they also provide a memorable community experience of interactive co-operation in acquiring practical knowledge and raising the level of social (health) culture. It provides an opportunity and a chance to innovate and gradually adapt some revised and novel methodologies (Kolosai et al., 2018, Feith et al., 2018a) educational and constructive peer education solutions. This is the case, for example, in the methodological innovation where children of the same ages teach each other in small groups, with appropriate tutor (and/or student with tutor control) (Kolosai et al., 2018). Multiple and reciprocal engagements in small groups of the same age are literally peer education in the close meaning of the word.

Students of two faculties of two different universities, one of Faculty of Health Sciences and another one of Faculty of Primary and Pre-School Education have been involved in the research of health education in three kindergartens, 13 secondary and elementary schools (from the sixth to the twelfth year), and 44 teachers of public education participated as well. Encountering peer-education in the higher education environment hopefully lays the ground for future successful task-oriented cooperation of professionals of different professions.

The implementation of STAnD is developing new pedagogical innovations to educate students by providing knowledge, skills, and abilities in health promotion and health education. These students will be able to fulfill the role of peer educators from kindergarten-age through the whole public education period. In addition, this innovative training model seems to be suitable to prepare a fruitful collaboration within school teams.

In 2016 and 2018 years, two Hungarian (Budapest) and one Romanian (Târgu-Mureş) universities (including 149 peer-educated students from pedagogical and health sciences faculties, and 26 peer helpers from secondary schools), three kindergartens, as well as 13 primary and secondary education institutions participated in the pilot program. Approximately 3000 kindergarten, elementary and high school children were trained in our health education programs. During the programs,

participants were trained by peer education method in the following particular topics: hand hygiene, fluid intake, basic life support, and internet addiction. The issues of the project recently supplemented are stress-relieving and exercise projects and the prevention of drug addiction.

CONCLUSION

In summary, interprofessional and peer education as well as collaborative practice can play a significant role in mitigating many of the interfering challenges and hindrances faced by health systems around the world. The STAnD program can provide an efficient way of increasing motivation for health consciousness primarily for the Z and Alpha generations of youth. The peer education as a novel (or at least newly recognized) pedagogical solution may serve as a successful tool set in education programs, including health promotion and consciousness.

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