INTERNATIONAL RESEARCH & KNOWLEDGE EXCHANGE FOR ADDRESSING TODAY'S GLOBAL HEALTH PARADOX

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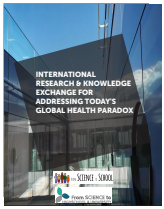

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Welcome to the International Research & Knowledge Exchange for Addressing Today's Global Health Paradox

Health is the natural state of a human being and is therefore foundational of leading a happy and fulfilled life. Despite great accomplishments in science and technology over the past decades, there remain, however, several challenges that affect human health and well-being. Environmental, economic and social changes contributed to a shift in health risks from infectious diseases to chronic diseases, mainly non-communicable diseases (NCDs), which are now considered one of the major threats to future public health. Although health is for free, it has to be earned over the course of a lifetime. Even though, a person may be able to buy healthcare, one cannot buy health in itself. The negative impact resulting from lifelong habits and behaviors such as poor dietary choices or physical inactivity, however, cannot be simply compensated by a pill or surgical procedure. As NCDs affect people of all age groups across the globe and are associated with 71% of global deaths, failing health, despite increasing healthcare budgets and costs is one of today's paradoxes. The aim of both these international meetings was to bring together researchers and stakeholders across various settings and disciplines (104 participants from 5 continents, 23 nations and 58 Universities/Organizations) in order to (i) showcase research projects to identify matching and overlapping areas of research, (ii) build bridges to overcome the remaining gaps between areas of research, (iii) introduce new research projects for future collaboration, and (iv) team up to build robust networks for future collaboration, for shaping better health of nations emerging from individual health for future generations.

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International research & knowledge exchange for addressing today's global health paradox

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DECLARATIONS

To the best of our knowledge, and as far as we know now after again checking the Frontiers Template, website and guidelines: https://www.frontiersin.org/about/author-guidelines#AdditionalRequirements we provided already in submission with 1st version of manuscript all relevant information.

CONFLICT OF INTEREST

The authors/editors declare that they have no competing interests.

AUTHOR/EDITOR CONTRIBUTIONS

KW conceptualized, designed, developed, organized, and conducted both scientifc meetings together with CD, WK, DT and TR. KW conducted and hosted both the meetings, the first together with MT and the second with CD.

KW drafted the manuscript, CD helped in drafting the manuscript, and CD, DT, TR and KW critically reviewed it. All authors/editors read and approved the final manuscript.

AUTHOR/PARTICIPANT CONTRIBUTIONS

Participants of both the international meetings submitted their abstracts to the respective meetings for the publication of the conference proceedings in frontiers in Public Health by following the guidelines (Title: maximum 500 characters; Authors: name the presenting author first and add affiliations in brackets; Abstract: maximum 250 words; abstract in English). They gave their written informed consent and declared thereby that they have read Frontiers terms and conditions and that they agree to grant to Frontiers and to the world at large a permanent, non-cancellable, free-of-charge, worldwide license (permission) to publish, display, store, copy and re-use that article – including any third-party materials – and to create derivative works from it.

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Keywords: health, physical activity, sport, diet, mental health, children, chronic disease, non-communicable disease, COVID-19

An integrative approach in addressing today's global health crisis

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Health is the natural state of a human being. Therefore, health is a foundational pre-requisite of leading a happy and fulfilled life (Wirnitzer 2018; Wirnitzer 2020). Despite great accomplishments in science and technology over the past decades, there remain, however, several challenges that affect the quality of life as well as health and well-being. Environmental, economic and social changes contributed to a shift in health risks from infectious diseases to chronic diseases, mainly non-communicable diseases (NCDs), which are now considered one of the major threats to future public health. Although health is for free, it has to be earned over the course of a lifetime. Even though, a person may be able to buy healthcare, one cannot buy health in itself. Digital/e-health strategies and measures can also be helpful to provide extended healthcare service, especially during the ongoing COVID-19 situation, and potentially improve digital/e-related skills and competencies of younger generations. The negative impact resulting from lifelong habits and behaviors such as poor dietary choices or physical inactivity, however, cannot be simply compensated by a pill or surgical procedure (Tuso et al. 2013a). Thus, along with the use of modern digital/e-technologies and tools for digital/e-health care services, health can neither be instantaneously downloaded or re-booted. In fact, personal behaviors have the greatest impact to harm or heal (40%) while medical care has the least impact (10%) (Schroeder 2007). The individual, therefore, has to be held accountable for shaping one's health as human beings are free to choose a lifestyle or specific behaviors that contribute to a specific (good or bad) state of health.

As NCDs affect people of all age groups across the globe and are associated with 71% of global deaths (WHO 2013; WHO 2020), failing health, despite increasing healthcare budgets and costs is one of today's paradoxes. Even in the most well resourced nations of the world, this trend seems irresolvable and unstoppable. While most NCD's (eg. cardiovascular disease, cancer, or diabetes mellitus type 2) are preventable and even reversible due to their association with poor lifestyle choices, they are the leading cause of global deaths, disability and diminished quality of life (Bentham et al. 2017; Sagner et al. 2017). In addition to the devastating health consequences at the individual level, NCDs put a considerable financial and economic burden on the society and undermine global social and economic development. Being obese, which is a major risk factor for NCDs, for example, has been associated with increased costs due to lost productivity and health care expenses between US $ 28,000 – 36,000 per person (Fallah-Fini et al. 2017). Further, Austrian health care costs, for example, amounted to € 45.4 billion in 2017 and are expected to increase by 4.9% annually (Export.gov 2019). Based on these numbers, Austria will spend an estimated € 52.4 billion on healthcare in 2020. Considering that tax money covers 75% of the total cost in Austria, the public should be included as much as possible in an effort towards sustainable health via prevention (OECD 2017; Export.gov 2019).

Despite the well-documented impact of various behaviors on health and well-being, many people, however, perceive it increasingly difficult to meet current health recommendations. Environmental, social, and cultural constraints and technological advances influence lifestyle choices along with economic changes reducing the need for physical activity (Archer et al. 2013; Church et al. 2011) while facilitating the consumption of energy-dense and processed foods (Kearney 2010; Baker et al. 2020). Accordingly, less than 3% of US adults are considered to live a healthy lifestyle based on physical activity (PA) level, diet, body composition and smoking habits (Loprinzi et al. 2016). In Austrian adults, 33% are overweight and 14% are obese; only 34% consume fruit and vegetables daily; 74% of males and 79% of females fail to meet the recommendations for health-related PA; 29% are smoking on a daily basis (23.5% of males, 17.8% of females) (Klimont & Prammer-Waldhör 2019; Griebler et al. 2019). Further, 34% of adults in Austria suffer from chronic health conditions (Griebler et al. 2019). Of additional concern is the high amount of children and adolescents with poor health behaviors. Across the globe, only 1 in 5 children and adolescents meet the health-related PA levels

and only 1 in 3 meet the current nutritional recommendations (Inchley et al. 2020a; Inchley et al. 2020b). In Austria, 81% of children and adolescents do not reach the recommended PA levels of at least 60 min/day and 2 in 3 do not eat sufficient nutrient-rich foods daily, like fruit and vegetables, and thus fail to be sufficiently nourished, which contributes to 1 in 5 being considered overweight or obese (Felder-Puig et al. 2019; Inchley et al. 2020a; Inchley et al. 2020b).

As exposure to risk factors for NCDs begins early in life, along with the fact that many lifestyle habits are established at young ages, a special emphasis needs to be put on children and adolescents. Today`s youth will also be the ones who shape the global and societal health of future generations and therefore warrant special attention. Considering a lifelong health-related action-readiness, the health-related knowledge, skills and key competencies for earning health through healthy lifestyles and behaviour (eg. diet and PA, sports & exercise) have to be taught and imparted at young age (Allison et al. 2007; Belanger et al. 2015; Dumith et al. 2011; Hespanhol et al. 2015; Oja et al. 2015; Telama 2009; Leitzmann 2018, p. 123; UN 2015; UNESCO 2017; WHO 2013; Wirnitzer 2020). The concept of health education pursues a holistic personality development against the background of health-oriented action competence and sustainable willingness to act (Wirnitzer 2019). In this context, child and adolescent health, particularly school health, is central to any sustainable health solution for the future. It is crucial to start health-related education early in life (Clark et al. 2020; Wojtowicz 2020; Okan et al. 2019) that provides healthy options and motivates for health-related activities. Health-related science, competence-orientated health literarcy and education for sustainable and lifelong health (Wojtowicz 2020; Okan et al. 2019), therefore, has to be put into policy and subsequent action that includes the community (Tuso 2014), family and educational settings. Public health strategies should be implemented as early as possible and at best, seamlessly continue from kindergarten up to the tertiary level (Leitzmann 2018, p. 123; Wirnitzer 2020).

Due to several reasons, individual approaches to health, however, are often one-dimensional, even though health must not be limited to a one-dimensional medical procedure or a single lifestyle factor. Food and sports, for example, are considered to be 'medicines' (Greger 2017, p. 23; Jeukendrup 2018; Khan et al. 2012; Oberbeil & Lentz 2015, pp. 9–14, 38, 100; PCRM 2018; PCRM 2020) and their combined application is a highly effective but simple tool for improving an individuals´ health (Wirnitzer 2018; Wirnitzer 2020). Therefore, as a first step and a simple, safe, low-cost, easy, highly effective

and promising tool, better health could start with the dual "Healthy eating – active living" approach (Tuso et al. 2013a) as a minimum recommendation to achieve cumulative health benefits that are by far greater than each behavior considered by itself (Wirnitzer 2020). The concept of Lifestyle Medicine, however, takes an even wider approach to prevent, treat and even reverse various diseases by replacing unhealthy behaviors with health-promoting ones. Specifically, six lifestyle areas are addressed and should be implemented in an individual's daily routine rather than relying heavily on traditional medical treatments, such as pills, surgeries or other medical interventions: (1) Nutrition (diet type, foods); (2) PA, sports & exercise (regular); (3) Stress (manage, reduce); (4) Relationships (love, support); (5) Sleep (improve); and (6) Substance abuse (limit, reduce) (ALCM 2020; Ornish 2020).

In many instances, appreciating a life-course approach for the development of health and disease might be the only way to future solutions. Accordingly, a comprehensive approach is needed that consists of multi-sectoral collaborations, which include stakeholders from health, education, science, agriculture, transport, finance, politics and others at national, regional and global levels. Thus, the much-needed innovative perspective to health and well-being will be transdisciplinary to help all protagonists from different areas in the healthcare system to conduct collaborative work at the highest efficacy possible (Sagner et al. 2017). Similarly a multi-level (from micro units: individual, family; up to macro levels: governmental policy-making), multi-dimensional (various areas and settings: eg. school, community; national health care system and services, statutory health insurance; lifestyle, behavior) is essential. European Union's policy-makers also emphasize the need for greater efforts towards a shift to the prevention of ill-health and disease and make health promotion a key component in ensuring future public health across nations (EC 2019). Globally, health policy changes are needed that follow the policy trends of the UN and other UN agencies (eg. FAO, UNICEF) as well as the WHO voluntary goals (WHO 2013) and UNESCO learning objectives (UNESCO 2017) in order to fight NCDs on a longterm basis.

We are convinced that the future of healthcare and medicine is better health achieved by the prevention of chronic disease rather than curing disease (treatment, therapy). In order to pursue this promising „prevention first" appeal in reducing the burden of chronic diseases and promote a transition from a predominantly reactive, medicalized, disease approach to a more proactive, de-medicalized, individualized, participatory and person-centered paradigm

that translates to healthy ageing (Tuso et al. 2013a; Tuso et al. 2013b; Tuso 2014; Sagner et al. 2017) joint initiatives of cross-cutting research arease are urgently needed. In an attempt to provide a stage for such an international, cross-disciplinary exchange, two meetings have been organized in the year 2020. The contributions presented in this abstract book reflect the diversity of participants and issues discussed, and showcase the opportunities that can arise with a collaborative approach.

The aim of both these international meetings was to bring together researchers in human health and health research across the globe to address the rapid changes and demands being placed on health and healthcare globally. With these, we provided a platform and brought together researchers and stakeholders across various settings and disciplines in order to (i) focus on a more lifestyle-centered approach on health, (ii) showcase research projects to identify matching and sequencing areas of (scientific) interest as well as overlapping areas of research, (iii) build bridges to overcome the remaining gaps between areas of research (ivory towers of excellence inclusive) as well as translating scientific results to applied settings and real-life actions, (iv) introduce new research projects for future collaboration, (v) team up to build robust networks for future collaboration, and (vi) translate excellent science to people who need to know how to get and stay healthy (eg. children, families, physicians) as well as settings of individual and large-scale/pubic relevance (eg. schools, hospitals, communities, nations) for shaping better health of nations emerging from individual health for future generations. This international research exchange, therefore, provides a foundation for further discussions on refining health technologies, interventions and measures, and the development of novel solutions for the future of public and global health that both emerge from individual health based on conscious health-related decisions considering health promotion, health maintenance and disease prevention and new, pragmatic and holistic visions and applications for tackling problems in the key areas of chronic disease, mental health and more.

Keywords: diet, physical activity, non-communicable disease, public health, health promotion

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Meeting 1 – Feb 6, 2020, 1-day meeting

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Health and wellbeing: Addressing today's global paradox

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Failing health despite increasing healthcare budgets and costs is one of today's health paradoxes. Even in the most well-resourced nations of the world, this trend seems irresolvable. Tackling this crisis of increasing disease burden and inflating health budget perhaps needs a fresh approach.

"State of Health in the EU 2019" published recently by the European Parliament emphasises a "shift to prevention and primary care" as most important (EC 2019), demanding prevention in future programmes and projects for health.

Additionally, wishes for 'new medicine' and new health care systems is now being voiced in many locations and different levels. Food & Nutrition, Sports & Exercise are recognized as medicine. Cumulative health benefits of these interventions are by far greater when delivered coherently and together. This combination of health-promoting behaviour tracks over time and is therefore best instilled in school children. Gaps remain in how to link current scientific evidence to practical settings. For instance, the evidence for individual-level

benefits and approaches for maximizing gains in the elderly, sports populations, and medicine can be further improved.

Evidence founded on today's best research tools, experimental methodologies and best practice is required to better define the mechanisms of such new and innovative approaches for sustainable health and well-being. Only cross-disciplinary and transdisciplinary research between medicine, nutrition, sports, health & life sciences will convince policymakers about sustainable solutions for addressing today's global health paradox.

The increasing burden of ill-health has a diverse and complex biology. Demographic challenges place further demands on chronic diseases and lifestyle diseases and several complex, unavoidable and currently unmanageable age-related complications and diseases. In many instances, appreciating a life-course approach to the etiology of health and disease might be the only way to future solutions. The much-needed newer perspective will be transdisciplinary and will involve a different, yet detailed, science-based analysis of many aspects of health, wellness & well-being, and the socio-cultural dimensions of ill health and progression to disease.

The aim of this meeting was to bring together stakeholders in order to (1) define a benchmark for appreciating projects, current and completed; (2) identify new ideas and future areas of importance; (3) define a consensus for meaningful, robust and realistic studies that address these needs; (4) conceive and briefly outline projects (small, medium and large) worthy of national (Austrian and other members states of the EU), European and International research grants; and finally, (5) define broad thematic areas with sets of actions and packages of work and a timeline for 2020.

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Theme-1: Dual Approach to Health – Diet Connected to Physical Activity, Sports & Exercise

Physical activity, sports, and exercise related to diet in international school health programs of primary and secondary schools levels I and II: A systematic review

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The most common causes of death today in Western countries are due to preventable diseases, mainly attributed to daily behavior. It has been well documented that genetics are influential, but not the deciding factor for the development of non-communicable disease. Ideally, the public should be educated to perform methods of optimal health and wellbeing independently, meaning that individuals should be in control of their own health without relying on others. As behavior is known to be consistent over time, good or poor health behavior will continue over from childhood to adulthood. PA and diet are permanently linked to the individual's state of health and when properly balanced, the effects on personal health summate, resulting in greater benefits from this dual-approach for public health.

OBJECTIVE

To highlight the different approaches (physical intervention, nutritional intervention, and dual-approach of diet and exercise) and identify the best intervention for sustainable body weight and healthy body mass index (BMI) in school children.

METHODS

A systematic review will be conducted following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. The review will assess international school-based diet and exercise interventions on children in primary and secondary school levels I and II.

DISCUSSION

Overweight and obesity develop as a result of an imbalance in the energy model, both physical activity and diet are influential in the fluctuation of body weight. The most promising method for sustainable body weight and healthy BMI in school children appears to be the dual-approach connection between physical activity and diet.

Dual approach to sustainable health – Lifestyle factors diet permanently related to PA, sports & exercise <-> future perspective

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Health above all is the most basic prerequisite for human develoment and becoming a successful athlete. Vegan diets are booming in the mainstream and in sport, with the younger generations are the key drivers of this global shift towards healthier and more sustainable dietary patterns. Vegan diets are appropriate for all ages, and athletes, too. However, despite the sound health benefits, vegans but vegan athletes in particular, are frequently faced with prejudice on unsubstantiated grounds. From current sporting success all the way back to ancient times, it is evident that vegans can win races up to professional levels and even break records. At the same time, data on veganism related to sports is sparse. Findings from our laboratory has been published over the past decade, show that a vegan diet is compatible with endurance performance and to contribute most beneficially to an athletes´ health. Therefore, this keynote sheds light on a highly underestimated body of evidence still mostly neglected. In presenting relevant information for both experts and practitioners in sports, it combines scientific rationale from evidence-based data with anecdotal information, in order to support a more healthy approach to individual health and sports nutrition counseling of young people and competitive athletes. The knowledge about the various advantages of vegan diets on health and sports performance has the potential to encourage athletes and their families, and experts in health, nutrition and sports, decision makers, multipliers and role models in sports and school settings, to be more open-minded when a pupil, student or an athlete expresses his/her desire to adopt a vegan diet.

Theme-2: Health of School Aged Children & Adolescents, and Healthy Ageing of Adults & Elderly

A NEAT way to an active lifestyle – the contribution of non-exercise activity thermogenesis to total daily physical activity

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Despite considerable efforts to increase physical activity (PA), many human beings do not meet current PA recommendations. Insufficient PA, therefore, is considered one of the major threats to future public health. Even though exercise programs appear to be a viable strategy to increase PA, such efforts have been of limited success, particularly regarding the sustainability of potential effects. One problem with exercise-based interventions is be the lack of consideration of compensatory changes that may occur in response to exercise. A key contributor to variability in total daily energy expenditure, for example, is non-exercise activity thermogenesis (NEAT), which is largely influenced by habitual PA. While energy expenditure during the exercise session most likely increases, there may be a decline in habitual PA due to post-exercise fatigue or a conscious decision to reward oneself with more sedentary pursuits outside the exercise session. In addition, it may be difficult to keep up with a regular exercise regimen due to the time constraints in modern society. In order to induce sustainable benefits, exercise should stimulate habitual PA. Emphasizing motor competence and physical fitness may contribute to an increase in total PA as motor competence forms the foundation for various movements, including sports, while physical fitness allows for the completion of daily tasks without undue fatigue and sufficient energy reserves for leisure time PA. These physiological adaptations could affect behavioral choices following an exercise-based intervention that potentially result in sustainable changes that facilitate a more active lifestyle.

The Health Oriented Pedagogical Project (HOPP) - A controlled longitudinal school-based physical activity intervention program

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BACKGROUND

There is a global concern for current and future health due to lifestyle related risk factors. In the near future many health care budgets worldwide will suffer from the burden of diseases. Studies show that preventive measures are the most effective "treatment" of disease, however, most countries uses only 1-3% of health care budget on preventive health. This imply that other parts of the society must take responsibility for preventive health. The school may be such an arena. Studies indicate a link between physical activity (PA) and academic achievement. This link relates to increased PA in general and PA before, during or after lectures. In HOPP, PA is performed during lectures, aiming at improving academic achievement along with preventive health by increased PA during school hours.

METHODS

7 intervention and 2 control schools, population of 2815 pupils were invited. Informed consent were given to n=2297 pupils (82%). This longitudinal cohort controlled study tested annually in 2015-2021. A drop-out annually was anticipated as the oldest children migrated to secondary school. The methods included test of cognitive, academic, anthropometric, blood, mental health, QoL, nutrition, physical fitness and PA. The intervention includes 45 min. of extra PA a day during lectures at school.

RESULTS

The results are presented internationally continuously involving all sections of the project and correlations between the different variables are investigated and reported.

CONCLUSION

The main effect of the study will be presented in 2022 after the termination of the study.

Sustainable education to achieve healthy children for our common future – Health is understood as complete physical, mental, social and spiritual well-being

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The International Association for Human Values (IAHV) is dedicated to provide youth with a healthy Body, a healthy Mind, and a healthy lifestyle in order to tackle the most serious and costly problems of youth in today`s societies. Neither at home, nor in schools or universities people learn how to handle stress, negative emotions, depression, anxiety, unhealthy life-style etc. The missing link in education is human development. In order to address these problems, the IAHV offers programs based on natural, evidence-based tools and techniques in schools and universities in Europe, Africa, and America, in order to train school and university teachers/lecturers to enable the implementation of the programs into their curricula by a 3-step model: The Healthy Body module with teaching content: (a) Physical activity (stretching and strengthening exercises); (b) Experiential processes that encourage mindful eating; (c) Interactive discussions on food and nutrition. The Healthy Mind module encourages a positive mental attitude through (a) Targeted yoga, and breathing techniques (improve focus and concentration; and enhance learning ability); (b) Relaxation exercises; (c) Experiential processes that revitalize human values (such as responsibility, respect, kindness, belonging, honesty, enthusiasm and service to society). The Healthy Lifestyle module consists of (a) Social-emotional learning and life skills in conflict resolution; (b) Teamwork exercises (manage emotions, resolve conflicts); (c) Interactive processes that encourage pro-social behavior, problem solving and cooperation; (d) Dynamic discussions (goal setting, good decision-making); (e) Practical knowledge that increases self-confidence and innerstrength to help students handle peer pressure and make healthy choices when faced with life's challenges.

From science 2 school: Sustainably healthy – active & veggy. Austria nationwide survey among pupils, teachers and principals of secondary level I and II

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Health above all is the most basic prerequisite for human develoment and becoming a successful athlete. Health is one of the great topics for the future in education, matching the UN SDGs No 3 "Good Health and Well-Being" and No 4 "Quality Education". Physical inactivity and overweight have been identified as global health issues of urgent concern. 30% of Austrian children are overweight and 85% fail to achieve the recommended 60 min/day of exercise. 10% of Austrians eat vegetarian or vegan (880,000). However, there is no information about the trends on plant-based diets of pupils and teachers. Therefore, this study aims to determine the prevalence of omnivorous, vegetarian and vegan diets among Austrian pupils and teachers of secondary level I and II, based on a large sample size. The study is supported by the Federal Ministry of Education, Science and Research, aproved by all the 9 federal educational authorities, and funded by the Tiroler Wissenschaftsförderung. 860,748 Austrians at 2,688 secondary schools will be invited to participate. The short standardized online survey is provided in German. Data will be collected Oct 2019-May 2020. Latest research suggests that for every 20-25 pupils, 2-8 are vegetarian/vegan, 6-9 are overweight and 16-18 do not achieve the minimum recommended amount of exercise. Healthier lifestyles track over time from childhood into adulthood. Thus, early intervention is key for achieving public health goals. This study will make a significant contribution to (i) overcome the lack of information and (ii) to health promotion as learners at all ages need health-related knowledge and skills, that will be translated sustainable readiness to act.

Potential variables to normalize motor fitness tests scores in school-age children

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In physical performance, normalization is defined as the process of removing the effects of anthropometric variables on the raw data extracted from performance tests, and the adjusted variable retains no significant correlation with the performance variable. The aim of the present study was to evaluate potential variables to normalize motor fitness test scores across different BMI-based groups of pre-pubertal boys. 136 healthy boys aged 6 to 11 were assigned into four groups of underweight, normal-weight, overweight, and obese children based on international BMI cutoff points. The correlations between motor performance (standing long jump and 5x10 m shuttle run) and 41 anthropometric variables were assessed generally and separately in each group. The most correlated parameters to jumping performance were waist-to-stature ratio, leg length, and arm span; while, leg length, height and arm span had the strongest correlations with agility performance ($p<0.01$). Interestingly, the ranking of the most correlated parameters with motor performance was not stable and varied across different BMI-based groups. In general, the importance of body lengths and body composition variables in the prediction of motor performance were much more clear than body circumferences and breadths. A large number of anthropometric and body composition variables can affect motor performance of school-age children in a positive or negative way. Physical educators, health professionals, and pediatric exercise researchers can apply the results from the present study in their normalization processes via a simple modulation according to the order of the correlated variables.

The impact of healthcare clowns on children, elderly, and medical staff

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While significant advances have been made over the last decade in the study of healthcare clowns, major research gaps remain. This paper provides an overview of the evidence available and the areas that demand further attention. The majority of extant studies consider the impact of healthcare clowns on children. Healthcare clowns have been repeatedly shown to reduce children's anxiety, and to lower their levels of perceived pain. There is also a variety of evidence concerning the impact of healthcare clowns on medical staff. Children visited by healthcare clowns are more cooperative with staff and the staff's own negative mood states, such as stress, are reduced. Impact on the elderly has received less attention, but there have been pilot studies suggesting that healthcare clowns may contribute to decreased agitation levels as well as a reduction of behavioural and psychological symptoms of dementia. Areas that have not yet received adequate attention include the impact on other important target groups of healthcare clowns, for example people with disabilities and people in crisis situations such as refugees. There is also insufficient data regarding the long-term effects of healthcare clowns. While clowns may contribute to long-lasting increases in resilience or perceptions of healthcare systems, most studies have concentrated solely on short-term effects. Finally, more attention is needed on how variations in target groups such as culture, gender, and age can change the response to healthcare clowns.

Beneficial effects of swimming training on somatic growth of pre-pubertal boys; A controlled semi-longitudinal study

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It is not yet clear whether the physical characteristics of elite athletes are due to the selection bias or the beneficial effects of training. We tested the hypothesis that swimming training, as a non-weight-bearing activity, alters the rate of physical growth in pre-puberty. Sixty-six school-aged boy (8.2±1.5 years) followed a 7.5-month instructional swimming curriculum (90 min/ three sessions per week) and were compared to a non-training control group of sixty-eight boys of similar age, height, weight, and nutritional status. Participants in both groups were assigned into two subgroups of BMI≤25 and BMI>25 in order to distinguish shape-specific adaptations. To monitor the changes in general and segmental growth, a complete profile of anthropometry and body composition measured at baseline and following the intervention. Compared to controls, swimmers showed significant developments in height, weight, skinfolds, body fat, leg length, and four anthropometric breadths ($p<0.05$). Using the WHO reference height- and weight-for-age percentile and Z-scores, swimmers in both BMI-based groups showed significant developments in height, while only non-overweight swimmers developed their weight. The increased height following swimming training was significantly correlated to changes in leg length, but not trunk length. In conclusion, instructional swimming training may accelerate the rate of physical growth during pre-puberty. For the parents who suffer from their child's height and weight, the study findings can encourage them to include their child in swimming programs. Pediatric exercise researchers and professionals can use the results of the present study in their research and work.

The Austrian Footprint Calculator for Schools (FPCS) in the context of the ÖKOLOG schools

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A healthy environment is a prerequisite for human health and it is important for children and adolescents to become aware of their responsibilities towards the environment and to have opportunities to discover what they can do. The FPCS, which is a component of Austrian Schools Ecology programme, is - like personal footprint calculators - a measurement of the extent of human impact on nature; the more natural resources used and pollutants produced, the greater the ecological footprint. Schools are living working spaces and everyday school life also causes a footprint. The FPCS enables users to measure consumption in the areas of Electricity, Heating, Water, Waste, Food, Mobility and Procurement and is a tool for the ecological assessment of schools in their entirety. The calculator provides opportunities for learners to research school as a place of learning, generate, test & present data and understand the complexity and systematic correlations at school and to build competences. Work on international versions of the calculator is ongoing (http://www.fussabdrucksrechner.at/schulen/index.html) and, in view of the current climate discussion, this international approach is a contribution to educational work supporting sustainability activities and local climate protection in schools and to promote the implementation of sustainable development objectives (Agenda 2030), especially: #4 High quality education; #7 Affordable & clean energy; #11 Sustainable cities & municipalities (municipalities – school authorities); #12 Responsible consumption and food production; #13 Measures towards climate protection (https://bildung.bmbwf.gv.at/euint/sdgs/index.html).

Theme-3: Public Health & Chronic Diseases including Mental Health, Cardiovascular Health, Metabolic Health, Autonomic Nervous System Health, Cognitive Performance

Complementary and alternative medicine: Chronic diseases and platform 2020 prague

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Increasing numbers of chronically ill accompanied by increasing treatment costs have two leading causes – not all possible solutions are used, and particularly there is a severe lack of prevention. Meta-analysis of hundreds of randomized control trials from the Cochrane database, related both to Complementary and Alternative Medicine (CAM) and to medicine in general, identified that CAM has only 7% lower provable positive effects compared to medicine in general, and minimal negative effects (EUROCAM 2020). Others showed that CAM treatments are cost-effective, thus their extended use could open up significant resources in healthcare budgets. Further development of individual CAM fields and their easier implementation into healthcare systems calls for unifying projects that would help enhancing the credibility of the CAM area as a whole, and facilitating the dialogue and mutual cooperation of CAM with the Evidence Based Medicine (EBM), so that the verified, efficacious, and cost-effective treatments of CAM could be more widely offered to the patients. The Platform 2020 Prague is an interdisciplinary project that is going to be established at the CAM 2020 Prague Congress on 20 June 2020. The project aims to become a milestone in unification and mutual support of all fields of CAM, via creating a common information space for communication across all fields of healthcare systems, including EBM, in order to use all options available in healthcare to the patients' maximum benefit.

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Innovative methods in cardiovascular & stress research: Non-invasive methods for the assessment of vascular and autonomic function

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Here we provide an overview of innovative non-invasive methods of vascular and autonomic function assessment and stress levels used at the Division of Physiology, Otto Loewi Research Center, Medical University of Graz. Different approaches can be used to assess endothelial and vascular function: flow-mediated dilatation (FMD), EndoPAT2000, and pulse wave velocity (PVW). Whereas FMD uses ultrasound to provide insights into vascular reactivity of the brachial artery upon blood flow occlusion, EndoPAT2000 assesses endothelial vasodilator function using probes that measure volume changes in fingertips. PWV is used as a marker for arterial stiffness by applying blood pressure cuffs at two different positions, e.g. carotid-femoral (PWVcf) or brachial-ankle (PWVba). Retinal fundoscopy displays a unique possibility to assess retinal microvasculature, specifically retinal arterioles and venules (arteriolar-to-venous ratio, vessel tortuosity index and vessel diameter), by taking a single picture using a (hand-held) fundus camera. Heart rate variability and blood pressure variability provide details on autonomic function (sympathovagal balance). The devices used to assess these parameters are small and light-weight, therefore, they can easily be worn for 24hrs without major restrictions. Measuring hair cortisol level as a stress indicator is a straightforward approach to investigate stress levels over up to 5 months (1cm of hair equals 1 month). Ultrasound can be used to assess subcutaneous adipose tissue by measuring the adipose tissue layer thickness on eight different body sites. In addition to being non-invasive, all those state-of-the-art measurements described are especially suitable to be performed e.g. in studies involving children and people confined to bed.

Alzheimer and the need for an extended theory for health

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This is paradox: Pfizer skipped its own studies on Alzheimer. The argument is: "The decision was driven by science, not cost" (Pfizer 2018). Therefore Pfizer does not expect sufficient paradigmatic power of recent science. Maybe conclusive: The cause-response relationship depends on the evolutionary level of the related processes: We can predict the "very ancient" physical interaction. We know the cause for the probability to die on an "ancient" poison. We lose causality for the (ancient) morphological phenomena e.g. of CHD in combination of subjective valuation, behavior and smoking. Nevertheless, the relevant output of Alzheimer are not morphological ones: They deal with the personality, the youngest gain in evolution. However, even a genius needs his body to express his intellectual messages thanks to stimulation of ancient proteomic and genomic. What is cause, what is response? Mono-causality or multicausality? Change the meaning of structure within time – as during pregnancy - or not? The actual available tool is to link phenomena just on statistical significance to clusters. Different to lotto "5 from 45"? However, one will be the lucky winner – if the game is running long enough. Science should learn from economy and see the challenge: Recently we have no better tool and should stimulate its use. Nevertheless, we should respect Einstein: The phenomena are fix, but paradigms are just free inventions of the human mind, can be modified and are justified just by their power to deal with reality. Let´s lock for an "evolution based" paradigm.

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Theme-4: Diverse Aspects of Health

Comparison and integration of medicine systems: A geometric approach

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INTRODUCTION

Concerning physiology and pathology, in all humans there are common features as well as dissimilarities. Since 2000, in orthodox Western medicine the focus has shifted from the first aspect to the second one ("personalized medicine"). In traditional medicine systems, an intermediate position can be found since centuries: A smallish number of principles (regulatory types, categories of behaviour) are considered. The treatment depends on the symptoms as well as the regulatory type of the sick person. Greco-Roman antiquity. There, the regulatory types are called temperaments. The 4 "temperaments" (phlegmatic, sanguine, choleric and melancholic) are attributed to the 4 "elements" water, air, fire and earth, respectively. This can be conveniently displayed in a diagram with reference to the temperature and moisture axes. Ternary typological systems in Asia. In several medicine systems, 3 regulatory types or principles can be found, e.g., in Ayurveda (= Indian medicine), Tibetan medicine and ancient Chinese medicine: the 3 Ayurvedic doshas, the 3 nyes-pas of Tibetan medicine and the 3 Chinese principles. They are comparable to each other. The characteristics of the doshas can be found in Kratky (2017). They can also be related to the temperature and moisture axes. This can again be diagrammed: as 1-dimensional circle representation or as 2-dimensional disc representation ("health disc" with "life spiral" that separates healthy and diseased regions of the disc). At last, the expansion to higher-dimensional diagrams is suggested.

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Climate change and the healthcare paradox

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Modern health systems are indispensable for human health and wellbeing, but their sustainability is increasingly being questioned. Healthcare is one of the largest and fastest growing services sector across the OECD and spending on health is predicted to climb further in rich nations due to demographic changes, life-style related diseases and fast medical advances. System inefficiencies like over-prescription of pharmaceuticals, multiple examinations, hospital centeredness and stakes from private industry reinforce this development. Accumulating climate impacts are leading to further increases in demand. Moreover and largely unnoticed by health policy, healthcare is also known as a large contributor to environmental crises such as climate change. This makes the health sector a system vulnerable to and an important driver of climate change. As recently shown, 4.4% of global greenhouse-gas emissions are attributable to healthcare. Across studies and countries, the health carbon footprint (HCF) varies with an average share of about 5% to the national carbon footprint. Hospital services and medical goods, in particular pharmaceuticals, stand out as especially carbon intensive. Paradoxically, while restoring health healthcare thus threatens public health and in turn increases health service demand worldwide. An Austrian HCF study, published earlier this year, reveals many untapped possibilities to reduce the HCF and conclude that health sectors can and should extend their emission reduction efforts to the medical area, without undermining healthcare provision. The most radical approach would be a transformation of the entire system by strengthening prevention and extending the mission of health sectors towards promoting human and planetary health.

Biological rhythms and health – Health and prevention as a new focus of a medicine of the future

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Medical practitioners today have an enormous knowledge about many diseases, but comparatively very little knowledge about health and a healthy lifestyle. This was even admitted in The Lancet recently, which found unbelievable little knowledge of young MDs about healthy nutrition, one of the ground pillars of a healthy lifestyle. Looking at the pillars of health one can identify nutrition and clean water and air, moderate exercise, sleep and rhythmic life, a good social environment and reduced stress as the main determinants of a healthy life. In todays medicine, the principles of diagnosis, therapy and prognosis have successfully been applied to diseases. In a future health-oriented medicine, we suggest to use the same principles for health: Health diagnosis will search for variables suited to assess the health state of the subject. Instead of the usual N.A.D. – nothing abnormal detected, a healthy client should receive a rating for the state of its health, composed of different parameters: In a pilot study with patients in rehabilitation after planned surgical treatments. It turned out, that 40% of the outcome after one year could be predicted by chronobiological/autonomic nervous system parameters like heart rate variability and circadian rhythms, 33% by clinical parameters and 27% by psychological questionaires. Health therapy or promotion will use any available means to actively promote health in subjects that are healthy or suffer from diseases, that are treatable by suited lifestyle measures. Health prognosis will try to predict the health development of subjects by measuring suited diagnositic criteria based on future research, to make corrections eg of nutrition possible early.

Meeting 2 – Nov 10-11, 2020, 2-day online meeting

University College of Teacher Education Tyrol, Pastorstraße, Innsbruck, Austria
University College of Teacher Education Upper Austria, Kaplanhofstraße, Linz, Austria
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Improving child & adolescent health for better public health – Fiction or within the scope of possibility?

The perspective of a lifestyle-centered approach for Addressing Today's Global Health Paradox

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Health is a critical condition for a fulfilled life. Given the fact that children are key to a nation's present and its future, there is growing recognition of the importance of preventative measures at young ages. Furthermore, many lifestyle behaviors that affect health for good or bad are established during childhood and adolescence. Accordingly, there is an ethical, social and economic imperative to ensure children's health. Even though there are many different definitions of child & adolescent health (eg. WHO, UN), there is consensus on the importance of enabling children to reach their full potential as a prerequisite for sustainable development, which includes a state of physical, mental, intellectual, emotional and social well-being that

is based on lifestyle behaviors, such as healthy foods, sufficient physical exercise and sleep.

Poor lifestyle choices, however, have contributed to the occurrence of non-communicable disease (NCDs) risk factors at young ages that have been previously observed in adults only. For example, 30% of Austrian children/adolescents suffer from overweight/obesity; 80% do not reach the recommended physical activity level of 60 min/day (Inchley et al. 2020a; Inchley et al. 2020b; Felder-Puig et al. 2019; Bentham et al. 2017; Griebler et al. 2016); and many face circumstances of other serious and chronic health conditions (eg. hypertension, high blood glucose, high cholesterol levels, type 2 diabetes, lung disease, vascular fatty streaks, cancer, heart disease, stroke). Based on the underlying causes and mechanisms to develop NCDs, it is also well accepted that lifestyle behaviors track over time from childhood into adulthood. Thus, it is crucial to establish healthy lifestyle behaviors at a young age.

In addition to these lifestyle-based diseases, the world is facing challenges like antibiotic resistance and the current COVID-19 pandemic, which puts an extra impact on shaping child & adolescent health. Today's children, therefore, face an uncertain future despite considerable improvements in the past. Although healthcare costs and budgets increased over the past decades (estimated € 52.4 billion for healthcare budget in 2020 in Austria) (Export.gov 2019; GBD 2019), failing health is one of today's paradoxes.

Therefore, the aim of this international meeting and research exchange was to bring together researchers and stakeholders in order to (1) discuss the themes and areas around lifestyle-centered child & adolescent health; (2) showcase ongoing and completed research projects; and (3) introduce new research ideas that address the complex challenges and needs of child & adolescent health for future collaborative projects in order to apply for national and international grants.

Keywords: youth, health behavior, health promotion, sustainable development

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Theme-1: Nutrition: Food over Medicine

Taking the fear out feeding vegan diets to children

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Plant-based dietary styles are proving to be highly effective tools for both preventing and reversing chronic disease. Yet, the subject is rarely mentioned in medical school education, thus depriving young doctors and those in their care of both improved health for the patient as well as greater clinical satisfaction for the practitioner. The "Moving Medicine Forward" Initiative seeks to remedy this deficit by introducing the concept of plant-based healing programs into medical education, both in the pre-clinical and clinical phases of training through lectures, case studies and individual counseling of students and colleagues. To help legitimize and encourage the idea of nutrition-focused, lifestyle medicine to students of all healing disciplines, a series of "Master Classes in Plant-based Clinical Nutrition" is being offered, as well as encouragement of the formation of Lifestyle Medicine Interest Groups - with virtual Q&A's with experienced, plant-based clinicians - offered to medical students and those in post-graduate training. Dr. Klaper will relate his experiences with both disease reversal utilizing whole-food, plant-based diets and his efforts to bring awareness of this powerful - yet under appreciated - modality into mainstream medical education.

Childhood obesity and nutrition

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Obesity is a pathology that is arithmetically increasing worldwide. It is responsible for several pathological complications, such as cancer, metabolic syndrome and cardiovascular diseases. Nutrition is important to trigger obesity in early childhood because of food abundance in modern era. The nutritional behaviour in the family, type/composition of food, and most importantly, maternal nutritional status during pregnancy and breastfeeding, affected by food contaminants, are all closely related to obesity in children. Though several genes, involved in energy balance in the body, might contribute to predisposition of childhood obesity, the material over-eating during gestation might initiate some epigenetic modifications that may also predispose the children to the incidence of obesity. The excessive consumption of lipid products is also considered as a key factor, involved in this pathology. Our laboratory has also demonstrated that some genes involved in the regulation of fat-rich food might be critical for the development of obesity in early childhood. In this presentation, we would like to demonstrate the implication of nutritional factors and the possible nutrition-based intervention strategies to combat obesity.

The catering situation at Austrian schools

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BACKGROUND

Due to the increase in all-day compulsory schools in Austria, it is important that students receive health-promoting meals throughout the day. The aim of the analysis was a nationwide evaluation of the current situation concerning catering in schools.

METHODS

Using a nationwide representative sample of schools from the 5th grade upwards, a questionnaire was conducted as a telephone interview with 331 randomly chosen schools. In addition, 56 schools from the 5th grade onwards were randomly selected in Vienna in order to analyze the current offer at school cafeterias in detail.

RESULTS

Lunch was offered at 72% of all schools, a school cafeteria at 81%, a cold drink vending machine at 66%, a hot drink vending machine at 41% and a snack vending machine at 23%. With regard to the health promoting composition of the catering offer, 18% of all schools already had a certified lunch menu, 22% a certified school cafeteria, 14% a certified cold drink vending machine and 5% a certified snack vending machine. In 79% of cases there is direct competition for school catering (93% supermarkets, 45% bakeries, 33% snack stands, 8% fast food restaurants). The results of the detailed analysis in Vienna showed that only 35% of all school cafeterias are awarded an "excellent offer". All of these locations are advised externally.

CONCLUSIONS

Most of the schools offer catering during breaks and at lunchtime. Without external advice, the majority of the offers must be classified as not health-promoting.

A local school meal initiative to promote healthy plant-based meals in secondary schools

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Veg Cities is a feature campaign of Sustainable Food Cities, led by food and farming charity Sustain in partnership with the wider Peas Please initiative. The initiative encourages the consumption of an extra portion of veg. As part of this, the local council and food partnership, in the South East of England, created a catering challenge to provide low-cost and nutritious plant-based meal options to secondary school students. The meals were judged by students and catering industry experts, piloted in school-canteens with the outlook for citywide rollout.

Sugar reduction in beverages – From a school intervention to a nationwide public health initiative

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INTRODUCTION

According to the WHO, sugar-sweetened beverages (SSBs) are one of the main causes of obesity and type 2 diabetes. In Austrian schools SSBs are offered at school cafeterias and in vending machines. SIPCAN advocates a gradual reduction in the sweetness of SSBs to support a healthier lifestyle.

METHODS

Based on the WHO recommendation to reduce the intake of free sugars to less than 10% of the total energy intake, the value of 6.7 g of sugar per 100 ml was derived in agreement with the Ministry of Health and Education. In addition, no artificial sweeteners should be used. Both criteria are target parameters for the industry, consumers, and also for catering companies in schools. In order to control these requirements, a nationwide survey is conducted annually since 2010. The results are made comparable as a checklist.

RESULTS

In the last 10 years the average sugar content decreased from 7.53 g per 100 ml to 6.04 g per 100 ml (-19.7%). The percentage of beverages containing artificial sweeteners decreased from 19.3% to 11.8%. The proportion of beverages that meet the specifications increased from 39.3% to 59.0%.

CONCLUSIONS

The developed method leads to a gradual reduction of the sugar content and to a smaller range of drinks containing artificial sweeteners. Next, special attention should be paid to the portion size of those beverages that do not meet the current criteria (including sports and energy drinks). If consumed, this should be in the smallest possible portion size (e.g. 250 ml or smaller).

Projected study proposal: A multicenter prospective controlled observational study investigating the effects of a vegetarian and a vegan diet on physical and cognitive development in early childhood – the APEK-Study

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There is a lack of information about the impact of vegetarianism and veganism on early childhood development. The aim of this study is to investigate whether vegetarian and vegan diets in early childhood are associated with altered physical and neurocognitive development at 6 years age. We project to recruit pregnant women who intend to feed their children either a vegan, a vegetarian or an omnivorous diet and follow the offsprings until their 6th year. The diet composition will be evaluated yearly by 3-days-food-intake-protocols, the nutrient supply and the pollutant exposure assessed by blood and urine examinations. The microbiome composition will be examined by analysing stool, mucosal and skin swab samples. The frequency of occurrence of adipositas and chronic diseases will be evaluated by anthropometric data and yearly questionnaires. The cognitive development will be assessed at 6 years when elementary school starts. The data will be compared between the omnivorous, the vegetarian and the vegan group. Vegetarian and vegan nutrition has an enormous impact on health and metabolism in humans. Although scientific data shows positive effects of plant-based nutrition, the topic is controversial because of lack of solid long-term data on safety in children. In Germany vegetarian and vegan diets in childhood are currently not recommended from DGE (German association for nutrition) and DGKJ

(German society for Children and Youth medecine). However, because of ethical, environmental and health considerations, there is a growing amount of vegetarian/vegan families in society. The results of the APEK-Study may help health professionals in advicing vegetarian/vegan families and bring more clarity to the health effects in children.

Theme-2: Physical Activity, Sports and Exercise: Exercise is Medicine

Physical activity: Important lifestyle factor for prevention and exercise immunology

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The Nurses' Health Study (n=73196) and the Health Professionals Follow-Up Study (n=38366) showed, that lifestyle factors such as smoking, physical activity, alcohol intake, body weight, and diet quality affect both total life expectancy and incidence of chronic diseases (Li Y et al, BMJ 2019). The EPIC Study (n= 291778) revealed that healthy lifestyle behaviors were inversely associated with the risk of cancer and cardiometabolic diseases. Sedentary lifestyle is a worldwide public health problem, being responsible for up to 10% of the global burden of non-communicable diseases and premature deaths (Lee IM et al, Lancet 2012). The National Health Interview Survey (n = 479856) showed that regularly performed physical activity and muscle strengthening were significantly associated with reduced risk of all cause and cause specific mortality. A persistent systemic inflammatory state is typical for cardiovascular and metabolic diseases. Regular exercise training increases immune competence and reduces the risk of infection compared to a sedentary lifestyle. The anti-inflammatory effects are mediated by the release of anti-inflammatory cytokines and stress hormones from muscle. Besides that, physical activity seems to modify metabolic signals and to recover the immunoactive "brown fat". In conclusion, moderate and regularly performed physical activity is supposed to be an important lifestyle factor for prevention and therapy of major chronic diseases. Promoting healthy lifestyle helps to reduce the healthcare burdens through lowering the risk of developing multimorbidity and extending healthy life years expectancy.

Yoga in school sport – a non-randomized controlled explorative study in Germany including a qualitative evaluation and heart rate variability analysis

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BACKGROUND

Distress is an increasing public health problem for adolescents and young adults. Persistent stress can lead to manifold stress-associated diseases including mental illness in children and adolescents. We aimed to evaluate potential effects of a 10-week 90-minute once-a-week yoga course.

METHODS

A non-randomized controlled study with a school sport control group was implemented in two Berlin secondary schools. Primary outcome was stress on the Perceived Stress Scale from baseline to week 10. Secondary outcomes included several questionnaires assessing depression/anxiety, attention and quality of life, among others. Moreover, a heart rate variability analysis (HRV) and a qualitative evaluation were conducted in subgroups of study participants. Parameters were assessed at baseline, week 10, and at a 6-months follow-up. An intention-to-treat analysis using ANCOVA was performed.

RESULTS

92 participants (67% female; 19.6±2.2 years) were included. No significant differences were observed between the groups with regard to PSS, at either 10 weeks or 6 months. Only VAS headache in favour of yoga and HADS-D in favour of school sport showed significant group differences at the 6-months follow-up. Significant intra-group mean changes for the primary outcome and several secondary outcomes were found in the yoga group. An increase in HRV (more parasympathetic dominance and overall higher HRV) after ten weeks of yoga at school compared to regular school sports was demonstrated in 35 participants, showing improved self-regulation of the autonomic nervous system. The analysis of 18 interviewees resulted in 4 key topics: 1. encountering yoga, 2. yoga practice, 3. effects and benefits of yoga, and 4. yoga in the school context.

CONCLUSIONS

Young adults in German secondary school settings might benefit from yoga, as the found effects were more prominent in the yoga group. Yoga can provide both physical and psychological benefits to young adults.

Health status of vegetarian and vegan endurance runners – Lessons to be learned to improve the health of pupils and adolescents: A dual approach for better public health

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Health effects of vegetarian and vegan diets are well known. However, data is sparse in terms of their appropriateness for the special nutritional demands of endurance runners. Therefore, the aim of the NURMI Study (Step 2) was to investigate the health status (HS) of vegetarian (VER), vegan (VGR) and omnivorous endurance runners (OR). A total of 245 female and male recreational runners completed an online survey. HS was approached by measuring health-related indicators (body weight, mental health, chronic diseases and hypersensitivity reactions, medication intake) and health-related behavior (smoking habits, supplement intake, food choice, healthcare utilization). Data analysis was performed by using non-parametric ANOVA and MANOVA. There were 109 OR, 45 VER and 91 VGR. Significant differences ($p < 0.05$) were determined for the following findings: (i) body weight for VER and VGR was less than for OR, (ii) VGR had highest food choice scores, and (iii) VGR reported lowest prevalence of allergies. There was no association ($p > 0.05$) between diet and mental health, medication intake, smoking habits, supplement intake and healthcare utilization. These findings support the notion that adhering to vegetarian kinds of diet, in particular to a vegan diet, can be the basis for a good HS. Therefore, this 'healthy eating – active living' approach is recommended to health experts, decision makers, multipliers and role models in politics, science and education, and encourages families, teachers and principals to implement this as a safe and cost-effective tool in everyday scenarios (eg. job, school settings).

How to increase physical activity across the lifespan? Emphasizing motor competence and physical fitness at young ages as foundation for an active lifestyle

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The health benefits of physical activity (PA) are well documented. Despite considerable efforts in the promotion of an active lifestyle many people fail to meet current PA recommendations. Of particular concern is the large amount of insufficiently active children and adolescents as behaviors adopted at young ages often transfer into adulthood. A focus on motor competence and physical fitness may provide a viable option in the promotion of an active lifestyle. Even though available evidence indicates a bidirectional association of motor competence and physical fitness with PA, there appears to be a shift in directionality over time. While a variety of movement experiences during early childhood nurtures the development of motor competence, high motor competence and physical fitness becomes increasingly important for continued participation in various forms of PA during middle and late childhood. With the beginning of comparing their own abilities to those of their peers, children with low motor competence and poor physical fitness may start to withdraw from PA, and start a vicious cycle of low PA, impaired development of motor competence and physical fitness. Emphasizing motor development during childhood, on the other hand, may facilitate continued participation in PA, including exercise and sports, that further contributes to improved motor competence and physical fitness. As this approach focuses particularly on children and adolescents, schools provide a viable intervention setting. Environmental facilitation including access to club sports, however, needs to be considered as well in order to tackle the current physical inactivity epidemic.

Theme-3: Mental Health

The impact of clowndoctors on hospitalized children – and beyond

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While healthcare clown research is a new field, a growing number of rigorous, peer-reviewed studies are concluding that clowns have a genuine, quantifiable impact on mental and even physical health. The Need for Joy: Many children struggle to cope with the hospital environment and medical treatments, which can involve pain, confusion, loss of control, and separation from family. The hospital experience may lead to Paediatric Medical Traumatic Stress, which can have long-term effects on a child's physical and mental health. After being discharged from the hospital, researchers have observed that some children exhibit symptoms of distress; they become more anxious and lose self-esteem and self-confidence. Scientific consensus is slowly building around the recognition that clowns can improve children's hospital experiences. Studies consistently show that interacting with a clown while waiting to undergo anaesthesia reduces distress and anxiety. A clown interaction doesn't only decrease negative feelings, it can also increase positive feelings. In RED NOSES, we call these procedures 'Intensive Smile'. Studies have shown that the benefits of medical clowning are not confined to children. Parents and hospital staff agree that clown visits boost children's morale, reduce their stress, and stimulate their imagination.

Yoga as a mental health prevention strategy

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INTRODUCTION

The HIPPOCAMPUS Programme was developed in a 30-month project funded by the EU Erasmus+ programme, involving Norway, Belgium, Italy, Spain and the UK. The programme focuses on improving the mental health and well-being of young people, especially disadvantaged young people, through the practice of yoga-based techniques.

METHODS

This programme was implemented in pilots across the five participating countries in a variety of contexts and evaluated, using a mixed methods approach. The quantitative element was a questionnaire based on the Warwick Edinburgh Mental Well Being Scale (WEMWBS), the Perceived Stress Scale (PSS) and sleep items from the PROMIS scale. The qualitative dimension used semi-structured interviews with a shared protocol which were then analysed using thematic coding.

RESULTS

There were 330 respondents in all. These numbers are well above previous sample sizes in most Europe/US yoga research. For both staff and young people there was a statistically significant (i) improvement in wellbeing, (ii) reduction in perceived stress, (iii) reduction in sleep related problems. Effect sizes were moderate. The shared themes that emerged in the interviews were that participants felt more calm and relaxed due to the yoga, had increased focus and concentration, increased awareness of body breath and self, they also felt more flexible and noted other physical benefits. There were indications of better emotional self-regulation and a desire to integrate the benefits more into their lives.

CONCLUSIONS

The results of this research show the benefits of this programme in youth contexts such as schools. The results, achieved across diverse contexts, point to the relevance of yoga as a tool for mental wellbeing, providing evidence that can be taken into consideration by teachers, school managers, policy makers and the research community to justify further work and wider adoption of yoga.

Scrutinizing high-risk behaviors amongst marginalized adolescents: A mixed-method study in Southwest Iran

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BACKGROUND

Adolescent-hood, as a developmental period, has a specific meaning and presents the adolescent with specific problems in its early, middle, and late phases. Living in marginalized areas with problematic socio-economic contexts can provoke the vulnerability of this age group. Therefore, this study aimed to investigate high-risk behaviors amongst the teenage students in the marginalized areas of Shiraz, South Wast of Iran.

METHODS

This is a mixed-method study. 473 students completed a questionnaire in spring 2018 and 7 focus group discussions were implemented from October 2018 to December 2018. Quantitative data were analyzed using STATA software and qualitative data analysis took place using comparative content analysis.

RESULTS

The results showed 22.3% of the participants were engaged in at least one high-risk behaviors. In total, 31% of the boys and 32.1% of the girls reported

addiction experience in the family. According to multiple regression analysis, age, ethnicity, having addicted family members, education, ICT usage, and HIV transmission knowledge statistically predicted high-risk behavior engagement ($p<0.0001$). The independent variables explained 19.8% of the variance of engaging in high-risk behavior. According to the qualitative results, three main categories of family-related challenges, individual challenges, and environmental challenges were effective in high-risk behaviors among teenagers.

CONCLUSIONS

High-risk behaviors are most prevalent among adolescents who are living in marginalized areas. To decrease these bahaviors and their consequences such as social harm, policymakers must focus on reducing social injustice, and improving family solidarity, a safe environment, and teenagers' resiliency.

Theme-4: COVID-19 in Children & Adolescents: Facts vs. Beliefs

Unspecific effects – Overseen hopes for COVID 19

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Infections are primarily biological processes, simplifiable as interaction of a guest with two types of properties (infectivity and virulence, summarized as "pathogeny") and a host with two types of properties: To be susceptible and able to fight against the pathogeny thanks to unspecific and specific defense. At the beginning of any epidemic with a new type of host (e.g. SARS CoV2) the organism cannot have specific tools (antibodies) and the society cannot offer artificial specific tools (vaccine) against the epidemic. Therefore unspecific processes dominate: (a) To restrict the contact with the virus (distance, testing, quarantine, lock down, etc.). (b) Unspecific defense must be sufficient so long that the body (or the society) can develop specific antibodies. Similar the fight against COVID 19: No specific drugs are available. But about 80% of persons with manifest symptoms recover without hospitalization thanks to the sufficient unspecific and so possible following specific defense, supported with the unspecific effects of refraining from daily live activities. Therefore we have to respect also the positive and negative influences of (emotional, cognitive and intellectual valuations and of behavior in) daily life. Technical produced N-Chlortaurin - a chemical of the natural unspecific defense against viruses - is available: A relevant but not used antiseptic offer for actual strategies. Comfortable equipment (hyper-hypoxia technique) allows using the property to train the body to use oxygen more efficient: An example for an option for mid term strategies. The classic weapons against high contagion index should be integrated into long term strategies.

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Possible effects of the Covid-19 pandemic on child and adolescent mental health: An opinion

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The Covid-19 pandemic has infected more than 37 million people causing over 1 Million deaths worldwide. Despite the possible access to vaccines in early future, it is critical to consider the impact of the Covid-19 pandemic on child and adolescent mental health. Before the Covid-19 pandemic, child and adolescent mental health was one of the main pillars in the 2013-2020 WHO action plan, extended until 2030, and the Covid-19 pandemic is an additional element to be considered. There is evidence, in different continents, associating the Covid-19 pandemic with poorer mental health in children and adolescents, such as higher proportion of anxiety disorders, depressive symptoms and additional mental illness symptoms. It is important to bear in mind that the pandemic is an ongoing process and there are several elements still to be evaluated. The current evidence presents the acute effects of the pandemic on child and adolescent mental health. It is necessary to evaluate the impact of social distancing and the repercussion of the adapted school routine on child and adolescent mental health. Moreover, it is necessary to determine which groups of children and adolescents (i.e. marginalized, low income, disabilities, migrants) are suffering the most and might be at higher risk of developing mental illness. Finally, it is pivotal that the scientific community test approaches addressing mental health problems in children and adolescents considering the Covid-19 pandemic.

An examination of changes in health behaviour in children and adolescents as a consequence of the COVID-19 pandemic

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BACKGROUND

The Covid-19 pandemic has likely had an adverse effect on the mental and physical health of children and adolescents, particularly those from vulnerable backgrounds. Evidence shows that the pandemic has exacerbated nutritional problems such as obesity, undernourishment and nutrient deficiencies next to sedentary behaviour and mental health problems such as anxiety, low-self-esteem and depression. This in turn increases the risk of suffering from poor long-term health outcomes later in life and therefore resulting in increased healthcare related costs. There is currently very little data to show the scale of the effects this pandemic has had on young people's lifestyle habits, namely nutrition and physical exercise, and their mental health. However, accurate data is vital in order to establish public health measures that prevent a further disparity in health inequalities.

AIM

The multidisciplinary project aims to establish a valid dataset which examines the changes the Covid-19 pandemic had on young people's lifestyle habits by linking the areas of nutrition, physical exercise and mental health.

METHODS

The exact methodology is yet to be determined but could consist of: Cross-sectional survey of a large sample size in order to make informed statements grouped into deciles of income deprivation.

CONCLUSION

This project contributes to the analysis, evaluation and learning from health outcomes of the current pandemic. It can provide a set of recommendations to governmental actors, policy makers, educational leaders and health professionals practice-oriented measures on how to improve health and wellbeing of our future generations. It will also provide insights on a set of actions promoting a proportionate universal approach, to reduce the steepness of the social gradient in health.

Effects of lockdown on physical activity, sedentariness and sleep of Italian children from 0 to 12 years old

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To reduce the negative effects of Corona Virus the Italian government activated a total lock down from March to May 2020. Everyone stayed at home. These three months reduced the pathological effects of Covid_19, but we wonder if there were consequences in physical activity and sedentariness of children from 0 to 12 years and what role adults and the environment played during this period. In 10 regions of northern, central, and southern Italy an online questionnaire has been administered through Survey Monkey platform since March 2020. 184 families of children from 0 to 12 years were interviewed. Three main aspects were investigated, also covered in the recommendations on physical activity and health of the World Health Organization: 1) physical activity of children; 2) time in front of the screen (pc, tablet, TV, cell phone, etc.); 3) duration and quality of sleep. 77,21% of the families declared that their child was moving less and much less; 62,79% said that their child was sitting in front of a screen more and much more; for 44.39% of the parents their son/daughter was sleeping more and much more, during the lockdown and 43.93% stated that their son's sleep was the same as before. Only 11.69% said that their son was sleeping less or much less. The lockdown reduced PA in childhood, especially for females. Parents dedicated more time to their children (74.88%) for sedentary activity even though 54% were engaged in telework. Children with an outdoor space were more active.

Covid-19 and social inequalities: Participatory diagnosis of the school community

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The coronavirus pandemic (COVID-19) in Brazil revealed the profound social inequalities, highlighting its complex relationship with health. In this sense, we started a qualitative research based on the participatory diagnosis of the health situation of the school community at the University School of the Federal Fluminense University (COLUNI/UFF), through the application of a virtual questionnaire to all families of students, teachers and school staff. The results of the questionnaire showed us that their main difficulties were related to employment and financial problems, because many people could not work as before. Mental and emotional health was also mentioned, related to fear, sadness and loneliness. In an attempt to discuss these issues with the community, a group of students of the undergraduate course in Social Work organized virtual workshops with specialists on each topic. In these meetings, we collectively discuss educational activities that contribute to the solution of the health problems that most affect the community and we are concerned with delving into the causes of these problems to expand the scope of participatory diagnosis. With the help of some elementary and high school students, we created a blog and social networks (Instagram and Facebook) to maintain communication with the community. With this, it was possible to disseminate updated and true information about the pandemic, which was important due to the worrying dimension of fake news. Through participatory research, we are expanding the participation of the school community in discussions about health conditions and social vulnerability impacted by the COVID-19 pandemic.

Theme-5: Environmental Factors

A local approach towards more sustainable and resilient food systems

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The Covid-19 pandemic highlights frailties of international food systems and is ultimately a warning of the ongoing threat posed by climate change. Food insecurity and unequal distribution reconfirm the need for a global food systems transformation. The 2019 EAT-LANCET review underlined the important interlink between human and planetary health. The current situation has led to a systems rethinking with many new partnerships between local producers, food businesses, schools, food organisations and local governments to provide food emergency response provision. There is an opportunity for locally lead whole-systems changes, integrating all aspects of food provision and achieving better public health. Further research is needed to evaluate the sustainability of these collaborative bottom-up approaches and provide action-based recommendations on how to strengthen local food systems.

Association of indoor air particulate matter count with obesity and blood pressure parameters in 10-14 year old children

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BACKGROUND

Particulate matter (PM) is a very important cardiovascular risk factor though very few studies have assessed how seasonal variation may impact obesity and blood pressure in children. This study, therefore, investigated the relationship between PMs and body size/blood pressure in children in winter and summer.

METHODS

A longitudinal prospective study with six-month follow-up design was used. 10–14 year old children from rural and urban schools of the Eastern Cape Province of South Africa participated in the study. Anthropometry was performed followed by blood pressure (BP) measurement. Indoor air PM concentrations were assessed in the classrooms in the presence and absence of the children.

RESULTS

All the PMs were significantly ($p<0.05$) higher in rural than urban schools and in winter than summer ($p<0.01$). The prevalence of obesity and high BP was independent of season and more prevalent in rural children, while obesity was higher in urban children. PM5 and PM10 showed a weak positive relationship with systolic and diastolic BP in both seasons while heart rate

was associated with PMs in rural children in winter only. Obesity correlated inversely with PMs in rural children in winter while PM2.5 showed a weak positive relationship with WC and BMI in summer only.

CONCLUSION

PMs were more prominently associated with measures of obesity and hypertension in rural children in winter. The exposure of children to PMs might increase the risk of cardiovascular diseases in children thus highlighting the importance of good indoor air quality.

Theme-6: Education and Literacy Considering Health and Sustainability – Diverse Aspects Affecting Children's Health to Improve Public Health

Nutrition literacy as a determinant for diet quality amongst young adolescents

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Life style specially improving diet quality has major role in health and disease prevention. Nutrition literacy is defined as the ability of an individual to obtain, process and understand nutritional information and services required to make proper (nutrition) decisions in their lives, which seems it would play a critical role in nutrition-related decisions and behaviors. We aimed to assess the association between nutrition literacy and diet quality among young adolescents. In this cross-sectional study, 388 adolescents aged 13-15 were selected from secondary schools, Shiraz, Iran, using cluster random sampling method. The Revised Children's Diet Quality Index (RCDQI) was assessed using a validated food frequency questionnaire and nutrition literacy was measured via a 3-dimensional questionnaire. Ordinal regression was used to examine the association between nutrition literacy and the quartiles of RCDQI as well as its components. Diet quality scores were higher in boys. Among boys, an increase in total nutrition literacy (OR: 1.049; CI 95% 1.001-1.098), interactive nutrition literacy (OR: 1.13; CI 95% 1.033-1.236), and critical nutrition literacy (OR: 1.086; CI 95% 1.016-1.161) could enhance diet quality. Furthermore, increase in functional nutrition literacy was associated with lower sugar intake and better energy balance in boys and higher dairy intake in girls. Sources that were mostly used to collect nutritional

information included the Internet (18.6%), families (15.2%) and books (13.1%). Since there was an association between health literacy and diet quality amongst adolescents, health policy-makers should develop new strategies with focus to increase understanding of nutrition literacy during adolescence years.

Relationship between nutrition knowledge, education and other determinants of food intake and lifestyle habits among adolescents from urban and rural secondary schools in Tyrol, Western Austria

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OBJECTIVE

The aim of this study was to investigate the association of the amount of hours of nutrition education and the teachers' qualification with nutrition knowledge and dietary behaviour in students.

METHOD

In this representative cross-sectional study, sociodemographic data, anthropometric measurements, socioeconomic status, physical fitness, nutrition knowledge and eating habits were assessed. Differences between groups were tested by Chi-squared- and t-test. Multiple linear and logistic regression modelling was used to examine the relationship between demographic characteristics, lifestyle and dietary behaviours, nutrition knowledge, nutrition trained teachers and amount of nutrition lessons. Setting: 16 secondary schools in urban (n=6) and rural regions (n=10) of Tyrol, Western Austria. Participants: Students (n=513) aged 14.2 (SD 0.7) years.

RESULTS

Higher nutrition knowledge was significantly associated with being in a rural school (P=0.001), having no migration background (P<0.001), (very) good physical activity behaviour (P=0.040), a non-trained teacher (P=0.006) but a higher amount of nutrition education (P=0.013). Regression models showed that higher nutrition knowledge was independently associated with lower intake of meat and iced tea, and a higher intake of vegetables and plant-based oils. A higher amount of nutrition education (in hours per week) was significantly associated with higher intake of dark (whole grain) bread, a lower intake of meat and of energy drinks sweetened with sweeteners.

CONCLUSIONS

Our results suggest that more hours in nutrition education lead to higher nutrition knowledge and may lead to health promoting dietary habits. School-based nutrition education can be seen as a preventive measure to increase nutritional competences in adolescents.

Education and literacy sexual health in child & adolescent

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INTRODUCTION

Sex education is a global challenge in connecting parents, schools, and child and adolescent. The most parents have problems with their children's sexual education. The most important of which are conservative attitudes towards sexual issues, Insufficient knowledge of children's sexual behaviors, Lack of readiness to identify, Coping and managing their children's sexual behaviors.

METHOD

The method of conducting qualitative research was descriptive phenomenological approach. In this research, the collect of data were using semi-structured in-depth interviews and Focus group with Parents (n=8), and key stakeholders (n=6), and Students 12-15 years-old (n=8) in one shiraz (Iran) high-school. Analysis of research data was used Giorgi's thematic analysis framework.

RESULTS

Its main theme consists of three categories were extracted "Ineffective educational context, conflicting socio-cultural context and critical adolescent behaviors" and Also, the lack of awareness and interactions with their child and adolescent on sex and relationship education topics was the basis of conflicting values in adolescents.

CONCLUSION

Familiarizing parents with materials has the potential to enhance sex education, by improving coherence between educators' and parents' messages to child and adolescent about sex and relationships, increased discussion of sex education topics in parent–child conversations and reduced parental anxiety about topics such as sexual orientation. Future challenges of involving fathers, scalability and sustainability highlight the dilemma of how best to enable parental choice or make equalities interventions.

Planetary health

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Ecosystems worldwide are threatened by climate change and a massive reduction in biodiversity, leading to the so-called 6th mass extinction. Climate change will influence everybody´s life: the proportion of population affected, and the severity of effects are inversely related with mild symptoms and discomfort touching almost everyone, worsening existing diseases and sometimes also leading to death. The causes are diverse: higher temperature and higher atmospheric CO_2, floods and draughts, sea level rise leading to water shortage and freshwater salization, wildfires and lower crop yields, higher ozone levels and particular matter air pollution. In consequence population migration will accelerate and in our native population, respiratory and cardiovascular diseases will aggravate, nutritional diseases and mental health disorders will increase and heat related diseases as well as water- and vector-borne diseases will appear as "new illnesses". Because human life depends on the stability of the earth's ecosystems, the destabilization of planetary health represents the greatest challenge of our time, and the future of our species is inextricable linked to planetary health. Climate change and loss of biodiversity are mainly caused by anthropogenetic forcings, like production of greenhouse gases, soil overexploitation and deforestation - all of which are often driven by food production as well as our everyday lifestyle. Everybody is demanded to engage accountability, but we also suppose a physicians' responsibility for planetary health: Promoting healthy lifestyles is not only beneficial for individuals' health, but also for planetary health.

TCIM: Biotronics as part of the comprehensive child health care, and Platform 2020 Prague

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Josef Zezulka Biotronics is one of the fields of Traditional, Complementary and Integrative Medicine (TCIM). It is related to millennial tradition of Siddha medicine. As part of comprehensive care for the development of children's health, this field repeatedly observed successes in treating developmental disorders such as cerebral palsy and light brain dysfunction accompanied by a significant acceleration of children's development, and even a miraculous rapid development of an underdeveloped kidney, evidenced by relevant medical records. One of the goals of the Professional Chamber Sanator is integration of this method into standard healthcare, but not only of this method. Meta-analysis of hundreds of randomized control trials from the Cochrane database identified that TCIM has only 7% lower provable positive effects compared to medicine in general, and minimal negative effects (EUROCAM 2020). Further development of individual TCIM fields calls for unifying projects enhancing the credibility of TCIM and facilitating the dialogue with Evidence-Based Medicine so that the verified and cost-effective TCIM treatments could be offered to patients. Platform 2020 Prague is a global interdisciplinary project that aims to create mutual support of all TCIM fields in a common information space for communication. Trial version of the Platform is already available, standard operation will be inaugurated at the Main Event of the World Health Congress 2020 Prague (WHC 220) in June 2021 with participation of major representatives of various TCIM branches.

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Campaigning about consanguinity and emergent eye diseases in children

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Twenty-two years ago, the L V Prasad Eye Institute, established Asia's first dedicated Children's Eye Care Centre in Hyderabad, India, now expanded as "Child Sight Institute" (CSI). Notable work with Sightsavers International was for Congenital cataract and Retinopathy of prematurity (ROP). Partnering with the Queen Elizabeth Diamond Jubilee Trust, the Government of India's National Health Mission and the Public Health Foundation of India a five year project for ROP in Telangana and Odisha states was completed. The unique LVPEI eye health pyramid with permanent infrastructure at 200 locations, provides ground up referral eye care service. CSI has successfully campaigned for the early detection of Children's eye problems: congenital cataract, squint, myopia, keratoconus, congenital glaucoma, retinoblastoma, and ROP, circumventing opportunistic screening, and preventing blindness. This model system is challenged by 14-16% preferential consanguinity in South India that risks genetic diseases in the next generation leading to vision loss and other comorbidities. 1 Regional epidemiological studies have shown that genetic retinitis pigmentosa is the second leading cause of incurable incident blindness. Multitudinal systemic disorders along with incurable blindness are a public health problem. We seek international support to facilitate a strategic media campaign for dialogue about avoiding the emergent large disease burden by addressing consanguinity in the community. In tandem with stakeholders such as the Institute of Genetics, National Institute of Mental Health, and civil society, L V Prasad Eye Institute seeks to arrive at a legal and social stand, so that children in the next generation can be saved from such incurable genetic problems.

Preventative and therapeutic approaches to manage childhood obesity – time to shift from generalized to personalized intervention strategies

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As a major public health concern, childhood obesity is a multifaceted and multilevel metabolic disorder influenced by several cofactors. At the most basic level and in line with general beliefs, obesity emerges from consuming more calories than expended, but evidence indicates that in addition to caloric imbalance, several modifiable obesogenic behaviors alongside genetic risk factors contribute and interact to the onset and development of childhood obesity. Although a variety of systematic review and meta-analysis investigations report the effectiveness of community-based, school-based, and home-based programs on the management of childhood obesity, researchers and pediatric clinicians are often encountering several challenges and the characteristics of an optimal weight management strategy remain controversial. While strategies involving a combination of physical activity, nutritional, and educational interventions are likely to yield better outcomes than single-component strategies, various prohibitory limitations have been reported in practice. Recently, the implementation of personalized approaches to managing complicated health problems is widely increasing. Personalized strategies targeting childhood obesity refers to prioritized nutritional, educational, behavioral, and physical activity intervention strategies based on the etiology of obesity and interpretation of personal characteristics. It seems that applying a well-proposed personalized program not only maximizes desirable outcomes, but they also potentially improve adherence to a healthy lifestyle pattern. In conclusion, there is a fundamental need to develop a comprehensive multi-level approach based on (1) assessment, interpretation, diagnosis,

and classification of the obesity causes; (2) setting realistic goals; (3) selecting, prioritizing, and implementing the appropriate individualized interventions; and (4) monitoring, supervising, and supporting the child.

Strengthening adolescent healthcare in the community clinics in Bangladesh

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Bangladesh is a low income, densely populated (~150 million) and riverine country. Nearly 40% of the population are children (~57 million). Adolescents (10 to 19 years) make up around 21 percent of the population in Bangladesh. Teenage marriage is not legally acceptable but still high rates due to socio-economic context of Bangladesh and adolescent pregnancy rate among teenage women (15–19 years) was 31% in 2014. About 66 percent of girls are married before the age of 18. Over one third of girls are married before the age of 15. Legally, the minimum age of marriage is 21 for the boys and 18 for the girls (Child Marriage Restraint Act 2017). Girls who are physically and emotionally not mature enough for pregnancy and child birth have a higher risk of succumbing to maternal morbidities. International evidence shows that babies who are born to teenage mothers may have lower survival rates. Mothers age 18 or under are more likely to have stunted children, and children are less likely to be stunted if their mother has secondary education (Global Nutrition Report (2016). Health care services are provided in Bangladesh by the government & private hospitals, national and international NGOs. The Government of Bangladesh has established 13,300+ community clinics for the maternal and child health care as well as primary healthcare for the poor and marginalized population. Bangladesh is committed to achieve the SDG. Sexual & reproductive health by 2030, so increased attention is given to the adolescent healthcare. The healthcare providers in the community clinics can be trained up to ensure the optimum adolescent healthcare i.e. health & nutrition education, hygiene especially during period, HPV & TT vaccines, use of contraceptives, iron & folic acid during menstruation and pregnancy, avoid pregnancy before 20 years of age, hospital delivery, anthelminthic, exclusive breastfeeding, basic newborn care etc. It would help to improve the maternal nutrition & birth spacing, reduce STDs & cervical cancer, decreased LBW & neonatal mortality rate and increase child survival rates.

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Prevention first – sustainably healthy, active & veggy from school up to highschool & university

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Health is for free but at the same has to be earned with time over the course of a lifetime up to old age. Considering to build up a lifelong health-related action-readiness, the health-related knowledge, skills and key competencies for earning health through healthy lifestyles and behaviour (diet, sports & exercise) have to be taught and imparted at a young age. The concept of health education raises the claim of holistic personality development against the background of health-oriented action competence and sustainable willingness to act. In this context, child and adolescent health, particularly school health, is central to any sustainable health solution for the future. Based on the fact that healthier lifestyles in childhood track into adulthood and old age, better public health emerges from improved pupils' health. Such important settings and occasions have the potential to preserve and track health messages over time providing one of the most promising public health approaches. Thus, it is crucial to start health-related education early in life and providing healthy options as well as motivate for health-related activities at the same time. As a consequence, by addressing four complementary areas to sustainable and lifelong health: (1) prevention of chronic diseases, (2) health maintenance, (3) health promotion, and finally (4) therapy and treatment of diseases, health-related science, competence-orientated health literacy and education have to be put into policy and subsequent action, most effectively in family and educational settings, at best seamlessly continued from kindergarten up to the tertiaer level (basic and advanced lectures).

Theme-7: Healthy Ageing from Childhood into Adulthood and the Old Age

The last child in the wood – early contact to nature and further health

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A critical point in the understanding of health, wellbeing and normality is the adequate understanding of the evolutionary process: This process did not stop with the emergence of the different types of biological structures. So we can use them also for non-biological purposes. But the individually given final biological structures are at the same time their prerequisites and their borders. These structures are also the output of a dynamic and partly not predicted process that started with the fertilization. This process could be influenced on each level in agreement with the demands of the actually given demands to survive - without respect to the demands of the later levels. Therefore needed structures can miss or be given for the dynamic development after birth. Therefore there is plasticity in their further applicability. So Karajan can express his understanding of Beethoven's symphony just with his movements – understood by the musicians. But any newborn child can be trained to be a killer without any feeling of guilty. No surprise that the early contact of children to nature seems to be relevant for normality from the medical and the social point of view. The classic book "The last child in the woods" presents studies of the risks of unwished effects in adults without such contacts as child. A short presentation of a slideshow of Austrian forests and music should allow to "catch" the linkage of the observation of nature and the perceiving of music, a special expression of manmade creativity as subjective feeling.

Breaking the cycle from older adulthood to childhood: Implications of a healthy lifestyle on aging

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BACKGROUND

Aging leads to a loss of physical function and independence through non-communicable disease development as well as changes to body composition and neuromuscular attenuation. Europe's population is shifting in age structure due to improvements in healthcare and living standards. Reduced independence in older adulthood combined with an increasing proportion of dependent older adults is causing a massive imbalance for European social and economic policy. Physical exercise is generally recognized as one of the most potent, non-medical treatments available to modify the problems associated with aging. In addition, epidemiological evidence reveals that non-communicable diseases are preventable and primarily linked with lifestyle (e.g. lifelong physical activity, healthy diet). According to the transtheoretical model of behavior change, adults are rarely capable of adopting a new healthy behavior; the limited window for adopting any healthy behavior exists mainly during childhood. Schools include a large makeup of the future population with wide socio-economic backgrounds and even influence lifestyle choices due to their educational efforts.

CONCLUSION

Appropriate physical exercise intervention for older adults will likely yield improvements to physical function and independence. Furthermore, a wide variety of problems associated with aging may be prevented by breaking the cycle, and therefore teaching school children to live a healthy lifestyle by interlocking the dual pillars of health – healthy diet plus physical activity.

Adolescent sexual and reproductive health: Examining the attitudes of in-school adolescents toward contraception in Nigeria

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INTRODUCTION

Adolescents constitute over 65% of the world and more than 63% of Nigeria population. Further, the marked behavioral changes in childhood are often influenced by hormones and society. Consequently, Nigeria aim to promote public health by combating unplanned pregnancies and sexually transmitted diseases among its youths.

PURPOSE

To examine the perspective of high-school teenagers in Nigeria toward the use of contraceptives in order to enjoy safe sex as a fundamental right and transit healthily to adulthood, since adoption of an innovation is directly proportional to its perceived benefits by the adopters.

METHOD

This paper was informed by literature on adolescent health from the 1980s to date, with materials gathered from web of science and other health and social care databases. Literature search was not driven by strategy but as a qualitative selection of the major contributions to theory and relevant debate.

RESULTS

In Nigeria, adolescents represent a social class that rely mainly on peers and media for information which predisposes them to misinformation. As a result, a significant number of adolescents hold negative views about

contraceptives with excuses such as inconvenient to use, causes infertility, cancerous, reduces sexual pleasure. Additionally, in line with health belief model, it is frequently reported that majority of these adolescents believe that the drawbacks of contraceptives usage outweigh its benefits. Thus, this orientation negatively impacts their behaviors.

CONCLUSION

Government, schools and parents should collaborate with health workers in providing sexual and reproductive health education geared towards reshaping teenager's mentality toward contraception.

Using home healthcare services: Situation and demands among the elderly in Thuy Bieu Ward, Hue City, Vietnam

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INTRODUCTION

Parallel with the aging population and increasing illness and disability, the need for home healthcare services has been growing rapidly among the elderly in Vietnam. The aims of this study were to determine the situation and demands of using home healthcare services and its associated factors among the elderly living in Thuy Bieu Ward, Hue City, Vietnam.

METHOD

A descriptive cross-sectional study was conducted on 425 the elderly. Data were collected by using a structured questionnaire. Information on using home health care services situation and demands (proportions, cost, types, quality assessments) among the elderly were calculated. Multiple logistic regression analysis was performed to measure the correlates of using home health care services.

RESULTS

The actual prevalence of those who had been using home health care services was 3.1% while the proportion of demands was 28.7%. Multivariate logistic regression analysis indicated that physical disability ($p<0.001$, 95%CI: 3.6-48.3), marital status were single/divorced/widowed ($p=0.03$, 95%CI: 0.3-0.9), unaffordability ($p=0.003$, 95%CI: 0.02-0.5), suffering acute disease ($p=0.023$, 95%CI: 1.1-4.5) or chronic illness ($p=0.004$, 95%CI: 1.1-2.7), and history of using ($p=0.002$, 95%CI: 2.6-60.7) were found to be significantly associated with need of seeking home healthcare services.

CONCLUSIONS

The actual prevalence of seeking home health care services among the elderly was low whereas their demands for these services were critically high. The health system should improve this kind of service to meet the demand of the elderly on healthcare at their home.

Vegan diet in health, fitness and sports: Benefits to adolescents and athletes – lessons to be learned to improve individual health

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Plant-based diets are booming and were forecasted to keep on growing even in 2020 with the younger generations being the key drivers of this global shift towards healthier and more sustainable diets. Health above all is the most basic prerequisite for becoming a healthy adult/elderly. Vegan diets are appropriate for all ages, and athletes, too. However, despite the sound health benefits, vegans of all ages but vegan athletes, in particular, are frequently faced with prejudice on unsubstantiated grounds. From current sporting success all the way back to ancient times, it is evident that vegans can win races up to professional levels and even break records. However, data on veganism related to sports is still sparse. Findings from our laboratory show that a vegan diet is compatible with endurance performance and to contribute most beneficially to an athletes´ health. The aim of this contribution is to shed light on a highly underestimated body of evidence still mostly neglected (inclusive the potential benefits-risks-ratio) in providing relevant information for both experts and practitioners in the field in order to support a more healthy approach to individual health and sports nutrition counseling of young people and competitive athletes. The knowledge about the advantages of veganism on health and sports performance has the potential to encourage athletes and their families, coaches, and experts, decision-makers and multipliers in health, nutrition and sports as well as educational settings, to be more open-minded when a pupil/student or an athlete expresses his/her desire to adopt a vegan diet.

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