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6th Annual International Conference on
Biology

22-25 June 2020, Athens, Greece

Edited by
Gregory T. Papanikos

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Abstracts
6th Annual International
Conference on Biology
22-25 June 2020, Athens,
Greece

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8 Valaoritou Street
Kolonaki, 10671 Athens, Greece
www.atiner.gr

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Preface

This book includes the abstracts of all the papers presented at the *6th Annual International Conference on Biology (22-25 June 2020)*, organized by the Athens Institute for Education and Research (ATINER).

A full conference program can be found before the relevant abstracts. In accordance with ATINER's Publication Policy, the papers presented during this conference will be considered for inclusion in one of ATINER's many publications.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which to discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the association. ATINER was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet to exchange ideas on their research and consider the future developments of their fields of study.

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world regularly meet to discuss the developments of their discipline and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published nearly 200 books. Academically, the institute is organized into 6 divisions and 37 units. Each unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this conference and its subsequent publications together. Specific individuals are listed on the following page.

Gregory T. Papanikos
President

**6th Annual International Conference on Biology, 22-25 June
2020, Athens, Greece**

Scientific Committee

All ATINER's conferences are organized by the Academic Council. This conference has been organized with the assistance of the following academic members of ATINER, who contributed by chairing the conference sessions and/or by reviewing the submitted abstracts and papers:

1. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, U.K.
2. Christopher Janetopoulos, Head, Biology Unit, ATINER & Associate Professor of Biological Sciences, University of the Sciences, USA.

FINAL CONFERENCE PROGRAM
6th Annual International Conference on Biology, 22-25 June 2020,
Athens, Greece

PROGRAM

Monday 22 June 2020

10.30-11.00
Registration

11.00-11.45
Opening and Welcoming Remarks: Gregory T. Papanikos, President, ATINER

12.00-12.45
Andriana Margariti, Senior Lecturer, Centre for Experimental Medicine, Queen's University Belfast, UK.
Title: Patient Specific Blood Vessels Organoids are Shaping the Future of Health and Medical Studies Providing Opportunities for Teaching and Research

12.45-13.00 Break

13.00-13:45
Roland Polacsek-Ernst, Witten/Herdecke University, Germany.
Title: Sickness Absence Cost Reduction in 25 Companies Related to Psychosocial Risk Management Interventions.

13.45-14.00 Break

14:00-14:45
Gregory T. Papanikos, President, ATINER.
Title: Do National Health Expenditures Matter for the COVID-19? Evidence from the European Union. (PowerPoint)

14.45-15.00 Break

15:00-15:45
Jordan Utley, Associate Professor, University of St. Augustine for Health Sciences, USA.
Title: Global Health Crisis: Building Interprofessional Teams through Online Education.

15.45-16.00 Break

16:00-16:45
Melinda J. Ickes, Associate Professor, University of Kentucky, USA.
Title: Supporting Youth E-cigarette Prevention Through Innovative Approaches.

Tuesday 23 June 2020

11:00-11:45

Anara Zhumadilova, Assistant Professor, Nazarbayev University, Kazakhstan.

Title: Factors Associated with the Prevalence of Dental Caries among the Children in Kazakhstan.

11.45-12.00 Break

12:00-12:45

Kristina Ndreu, Community Pharmacist, University of Medicine, Tirana, Albania.

Title: Cost-Effectiveness Evaluation of Bortezomib vs Vincristine Based Treatment for Multiple Myeloma.

12.45-13.00 Break

13:00-13:45

Elizabeth Ekirapa-Kiracho, Senior Lecturer, Makerere University, Uganda.

Title: Cost Effectiveness of a Facility Based vs Facility + Community and Usual Care Strategy for Type 2 Diabetes Management.

13.45-14.00 Break

14.00-14:45

Nikolaos Liodakis, Associate Professor, Wilfrid Laurier University, Canada.

Title: Assessing Canada's Response to the COVID-19 Pandemic. (PowerPoint)

Elizabeth Ekirapa-Kiracho

Senior Lecturer, Makerere University, Uganda

Cost Effectiveness of a Facility Based vs Facility + Community and Usual Care Strategy for Type 2 Diabetes Management

Introduction: Although it is known that interventions such as reducing obesity, increasing physical activity and increasing access to quality care, have the potential to improve the prevention and management of diabetes, the cost of implementing such interventions are not explicit especially in developing countries. The SMART 2D study funded by SIDA implemented a randomized control trial that aimed at increasing the control of type 2 diabetes using facility and community based strategies. The study was implemented in Iganga and Mayuge Districts in Uganda.

Objectives: The main objectives of this paper are to determine the incremental costs of providing care for diabetes using “facility only” strategies compared to “facility + community” strategies, and “usual care” and to determine the incremental cost-effectiveness of providing diabetes care “facility only” strategies compared to “facility + community” strategies, and “usual care.”

Methods: A cost analysis was undertaken to estimate the incremental costs using an ingredients approach to costing. The costing was done from a provider’s perspective and only financial costs were captured. The costs were categorized according to the type of inputs. These were grouped into recurrent and capital inputs. Adjustments were made for inflation and capital costs were annualized. Data on costs and effects was collected using a combination of methods that included a facility survey, exit interviews, observations and record reviews.

Results: The annualized total annual costs for the facility, facility + community and the usual arm were USD 26,173, 28,882 and 22,372 respectively. The main cost drivers were supplies (62%), personnel (18%) and then drugs (11.5%). The results indicate that the facility based strategy was more cost effective than the facility + community arm and usual care because its cost per patient treated (147\$) was lower than that for the other two arms. The cost per patient controlled (934\$) was lower than that for the facility + community arm (1108\$) and the usual arm (1864\$). The facility arm also had a lower incremental cost effectiveness ratio (237\$) compared to the facility+ community arm 461\$. The annual cost of scaling up the intervention to all lower level facilities (1725 facilities) was 8,193,085\$ while the annual Cost of scaling

up only to some of the lower level facilities (HC III (1510) was 4,631,214\$.

Conclusions and recommendations: The facility based arm was more cost effective than the Facility + community arm when compared with usual care. It had the lowest average cost-effectiveness, for both treated and controlled patients and a lower ICER than the facility and community arm. Management of patients with diabetes should focus on controlling the blood glucose of the patients rather than just treating them. This would help to reduce the unit cost per patient controlled. To enhance early and appropriate treatment so as to reduce complications and lost productivity due to diabetes the Government of Uganda should consider scaling up the facility strategy in a phased manner to HC III level.

Melinda J. Ickes

Associate Professor, University of Kentucky, USA

Dillon Lay

Research Assistant, University of Kentucky, USA

&

Sierrah Miley

Project Manager, University of Kentucky, USA

Supporting Youth E-Cigarette Prevention through Innovative Approaches

Background: In the US, more than 5 million young people report current e-cigarette use. Higher nicotine concentration in new pod-based and disposable e-cigarettes increases the risk for dependence and subsequent initiation of combustible cigarette smoking among youth e-cigarette users. The purpose of this presentation is to summarize youth e-cigarette prevention approaches that resonate with and engage young people. Specifically, student feedback and college facilitator insight will be shared regarding the implementation of #iCANendthetrend, including approaches used during remote learning.

Program/Campaign Overview: Researchers worked with college-aged students to develop a peer-led e-cigarette prevention program to target youth in Kentucky. Trained college facilitators deliver either a 1- or 3-lesson session tailored for elementary, middle, and high school students, as requested by the school. The program includes information on the current state of e-cigarette use among youth, the health risks of e-cigarettes, constituents of e-cigarettes, how youth are targeted and more susceptible to use, refusal skills, and strategies to make a difference in their own lives, schools, and/or communities.

Evidence-Based Approach: Developmentally appropriate, skills-based health education strategies are incorporated into program development and delivery. In addition, a youth empowerment framework is used to support social norm changes to end the trend of e-cigarette use.

Evaluation methods: Process evaluation data were collected from participating students via paper-based or online surveys. Social media reach outcomes were collected May 2020, post-COVID-19 remote learning practices. Descriptive and qualitative themes will be summarized and shared.

Results: Over 5,000 youth have been reached since February 2019. Students agreed or strongly agreed that they enjoyed the program, learned something new, enjoyed having college facilitators, and reinforced that the program was helpful. Students enjoyed the

interactive skill-based activities and wanted more opportunities for interaction. Social media reach increased dramatically during times of remote learning: 2,051 Instagram, 3,373 Twitter, 3,699 TikTok, and 8.086 Facebook impressions during May 2020.

Discussion/Conclusion: A peer-led e-cigarette prevention program is an approach that seems to empower youth and opens dialogue about this issue in an at-risk population. Students enjoyed the program, and there opportunities to expand programming efforts and sustainability.

Nikolaos Liodakis

Associate Professor, Wilfrid Laurier University, Canada

Assessing Canada's Response to the COVID-19 Pandemic

Although Canada has excellent Health Care (HC) systems, it continues to face serious problems responding to the COVID-19 pandemic. Most of them stem from the methods of collecting and sharing useful epidemiological data and attendant issues of policy and decision-making. Differential responses to the pandemic, although expected given the nature of the federal system, proved successful in Alberta and British Columbia but, by Canadian and international standards, failed in Ontario and Quebec.

Andriana Margariti

Senior Lecturer, Centre for Experimental Medicine, Queen's University
Belfast, UK

**Patient Specific Blood Vessels Organoids are Shaping the
Future of Health and Medical Studies Providing
Opportunities for Teaching and Research**

It is estimated that by 2025 there will be 380 million people with diabetes. Many of these patients will suffer from a range of macro and microvascular complications which can lead to ischaemic heart disease, stroke, limb amputation, kidney failure and blindness. Beyond controlling hyperglycaemia, dyslipidaemia and/or hypertension, there is limited scope to prevent the initiation and progression of these endpoints with most interventions being late-stage and after considerable tissue damage has already ensued. Treatment options involve the use of insulin sensitisers, α -glucosidase inhibitors, and β -cell secretagogues which are often expensive, limited in efficacy and carry detrimental adverse effects.

Approximately one half of patients with type 2 diabetes die prematurely of a cardiovascular cause due to defects on blood vessels.

Consequently, there is an urgent need for further research and clinical studies based on multi-disciplinary programmes to allow effective treatments for diabetes to be discovered.

Towards this direction, we have recently generated patient specific blood vessels, which are great models for drug screening and cell based therapies through stem cell technologies. Stem cell technologies are therefore aiding the advance of regenerative medicine by providing patient-derived disease models of vascular cells. Due to the differentiation capabilities of induced pluripotent stem (iPS) cells, reprogramming technologies offer approaches to develop patient-specific disease models. Vascular dysfunction not only impairs the function of ECs but also disturbs communication between ECs and pericytes. Organoids have emerged as promising model systems for human diseases and clinical applications. Human blood vessel organoids derived from iPS cells have recently been developed, containing ECs and pericytes that self-assemble into capillary networks. Grown in a petri dish, these 3D models display a striking structural similarity and function to human blood vessels.

This has also opened the horizon for further teaching and training opportunities, which will allow Personalised and Regenerative Medicine to transform the field of diabetes and improve the quality of life for millions of patients.

Kristina Ndreu

Community Pharmacist, University of Medicine, Tirana, Albania

&

Mirela Miraçi

Associate Professor, University of Medicine, Tirana, Albania

Cost-Effectiveness Evaluation of Bortezomib vs Vincristine Based Treatment for Multiple Myeloma

Introduction: Multiple myeloma (MM) is a malignant pathology that affects the B cells of the immune system. The asymptomatic progress makes it difficult to diagnose in early stages.

Objectives: The growing incidence and the great cost for the medical treatment of this pathology led us to perform the pharmacoeconomic evaluation of the cost and the effectiveness for the two main schemes based on Bortezomib (VED) and Vincristine (VAD), applied in previously untreated patients with MM, in QSUT hospital.

Methodology: A retrospective study was performed for the pharmacoeconomic evaluation of cost-effectiveness for the two treatment schemes (VED, VAD). The study period was from March 2015 to March 2016 and included all the patients of the Republic treated in the Hematology clinic of QSUT hospital in Tirana. Effectiveness was evaluated through the following criteria: 1. RBC, PLT and Cr levels in the beginning and in the end of the treatment, general physical state of patients following treatment and survival. Costs evaluation included direct medical cost for the treatment.

Results: The number of patients eligible for the study was 46, 24 (52.2%) for VAD scheme dhe 22 (47.8%) for VED. DMC on average was 1724075.6 ±522985.6 lekë for VED scheme and 84785.8±15465.0 lekë for VAD scheme, respectively. The levels of the clinical indicators on average after the conclusion of chemotherapy were: 1. RBC $3.9\pm 0.7\times 10^6/\text{mm}^3$ for VAD and $3.7\pm 1.0\times 10^6/\text{mm}^3$ for VED, 2. PLT $262.3\pm 85.5\times 10^3/\text{mm}^3$ for VAD and $240.8\pm 88.7\times 10^3/\text{mm}^3$ for VAD, 3. Creatinine $1.2\pm 0.6\text{ mg/dL}$ for VAD and $1.2\pm 1.1\text{ mg/dL}$ for VED. The general physical state following treatment was similar for both study groups, as was survival.

Conclusion: Through the analysis of the clinical data and indicators gathered in the study period, in addition to the analysis of the costs, it results that: VAD scheme is more cost effective than VED scheme for the treatment of MM.

Gregory T. Papanikos
President, ATINER

Do National Health Expenditures Matter for the COVID-19? Evidence from the European Union

Health Expenditures provide necessary resources to prepare a national health sector to cope with health emergency situations such as the current pandemic. Rich countries have the convenience to spend more on public and private provision of health services. This paper examines whether this simple logic has applied to current pandemic. Do countries with higher health expenditures (total, per capita and as percentage of GDP) show a better performance in terms of total and per capita deaths or in terms of number of people (total and per capita) infected? One expects that this would have been the case but the descriptive evidence of this paper shows that the association is exactly the opposite. Rich countries had more deaths and more cases than poor countries. Data from the 27 European Union countries are used to demonstrate that this was the case.

Roland Polacsek-Ernst

Professor, Witten/Herdecke University, Germany

Sickness Absence Cost Reduction in 25 Companies related to Psychosocial Risk Management Interventions

In context of the 2010-2012 European Committee of Senior Labor Inspectors (SLIC) Campaign on psychosocial risks, Austria amended its Occupational Health and Safety Act in 2013 forcing all companies to evaluate and reduce psychosocial stressors. To comply with this law more than 300 companies evaluated the psychosocial risks with the Module2 of Psychosocial Stressors (PBM2). 41 of these companies with about 21,216 employees already evaluated the effects of their risk reducing measures. Data of sickness leave days and the PBM2 before and after intervention were available for 25 companies with about 12,048 employees. All 25 companies were able to improve their working conditions and reduce work related distress. The average improvement was 8% (on a 100% scale). The best overall development was made in the work environment, with 13%, followed by social climate with 10%, the job requirements with 8% and finally work organization with 4%. The sickness leave days before the intervention were 11.8 days, (Austrian average 2018: 13.1 days) and reduced by 0.9 days per employee after intervention. The average annual sickness leave related cost reduction was about € 69,937,- per company. Interventions in the context of the mandatory psychosocial risk assessment for Austrian companies lead to significant reductions in psychosocial risks and sickness leave days in 25 companies. The changes in the Austrian law and consequent implementation by the labor inspectorate improved the working conditions significantly and also lead to sickness absence cost reductions in these companies.

Judi Schack-Dugre

University of Florida, Physical Therapist, USA

Jordan Utley

Associate Professor, University of St. Augustine for Health Sciences &
Consulting for Inter-professional Education (CIPE), USA

Karen Snyder

University of St. Augustine for Health Sciences, Occupational
Therapist, USA

&

Robin Dennison

University of St. Augustine for Health Sciences, Nurse, USA

Global Health Crisis: Building Interprofessional Teams through Online Education

Background: A public health pandemic coupled with an ever-expanding mobile and digital society mandates a need for healthcare teams to communicate and collaborate at a distance. Overcoming the logistics of traversing care-delivery institutions, health systems, and geographical borders are barriers that must be addressed. Academic institutions preparing health professionals to collaborate across these barriers can use online delivery modalities to solve these key challenges.

Methods: The Interprofessional Socialization and Valuing Scale-21 (ISVS-21) was used to measure changes in knowledge and attitudes toward interprofessional collaboration. Participants (N=129) completed the online survey before and after a series of collaborative interprofessional case studies.

Results: The results from the pre-test ($M=116.2$, $SD=28.7$) and post-test ($M=132.7$, $SD=13.6$) indicate a significant change in knowledge and attitudes toward interprofessional collaboration, $t(128) = -5.7$, $p=.000$.

Conclusions: Using distance education (online or hybrid models) can significantly change knowledge and attitudes regarding interprofessional team collaboration in a positive direction. The development of enhanced interprofessional collaborative skills may not require being in the same location with other members of the healthcare team. Closeness may create a sense of community that offers other benefits in healthcare delivery; however, fostering interprofessional collaboration through online activities appears to be equally effective, and is scalable and more economical to execute.

Anara Zhumadilova

Assistant Professor, Nazarbayev University, Kazakhstan

Factors Associated with the Prevalence of Dental Caries among the Children in Kazakhstan

Background: Dental caries is a multifactorial disease that requires detailed understanding of possible determinants as well as their effect on the population.

Aim: The aim of this study was to investigate affecting factors associated with the prevalence of dental caries and high frequency of DMFT to assess the dental health for better development of preventive methods.

Methods: We examined 2,149 schoolchildren from 4 regions of Kazakhstan. The cohort consists of a random cluster sample of children aged 11–15 years. All children were given questionnaires containing questions about socioeconomic status, oral health behaviors, practices and dietary habits. In a descriptive analysis, primary data were presented for each studied variable (unadjusted frequencies). Caries experience measured using DMFT (decayed, missing, and filled teeth) index. Possible risk factors associated with caries were assessed using logistic regression after adjustment for sex and age.

Results: Analysis of the study population revealed a high prevalence of caries. The prevalence of dental caries among all ages and all cities was 73.6%. The highest prevalence of dental caries was observed among 15-year-olds – 77.9% compared to 11-year-olds–68.3%. Our study showed that mean DMFT index was 3.09 among all children, the lowest mean DMFT index was among boys – 2.97 compared to girls– 3.19. The distribution of DMFT index, depending on the region of residence, had highest frequency of affected teeth among the children living in Semey city (4.8), and Oskemen city – (3.29), in Nur-Sultan city (capital city) – 2.45 affected teeth and the lowest frequency of DMFT was among the children from Kokshetau city (1.88). Statistical analyses showed that most common risk factor among all children significantly associated with caries was high daily consumption of sugar-containing drinks ($p=0.030$). We found significant association of caries with age of starting tooth brushing and brushing frequency ($p=0.041$). Unsurprisingly, the study revealed association of caries with age ($p<0.0001$) and gender, girls were more likely to have caries compared to boys ($p<=0.001$). We identified that caries was significantly higher among the children residing in the city of Semey ($p<0.0001$) compared to other cities.

Conclusion: We observed a high prevalence of dental caries in all children residing in the four investigated areas of Kazakhstan. It is highly important to develop and implement the countrywide program for intensive promotion of the oral health to reduce the high prevalence of dental caries and possible affecting factors. This program should become as a part of the school health policy which will include the instructions and education about oral health and harmful dietary practices.