International Conference on Chemical and Behavioral Addictions

March 9th–11th 2023

Poznan, Poland

ABSTRACTS BOOK

International Conference on Chemical and Behavioral Addictions

Poznan, Poland, 9th–11th March 2023

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Konferencja
International Conference on Chemical and Behavioral Addiction
Poznań, 9–11 Marca 2023
Program – Streszczenia

ISBN 978-83-7597-445-4

Redakcja:
prof. dr hab. Ewa Florek
dr hab. n. med. Piotr Rzymski, prof. UMP
dr hab. n. med. Michał Karlik
lek. Rafał Sibiak
mgr Joanna Nowakowska
Aleksandra Kurowska

Skład i łamanie:
Michał Karlik

Streszczenia publikowane są w formie nadesłanej przez Autorów.

Minister of Education and Science
Republic of Poland

Projekt dofinansowany ze środków Ministra Edukacji i Nauki w ramach programu „Doskonała nauka”
Project cofinanced by the Minister of Education and Science under the “Excellent Science” program

WYDAWNICTWO NAUKOWE
UNIWERSYTETU MEDYCZNEGO
IM. KAROLA MARCINKOWSKIEGO
W POZNANIU

ul. Bukowska 70, 60-812 Poznań
www.wydawnictwo.ump.edu.pl
Format A4.
Przekazano do druku w marcu 2023.

Dear Colleagues and Friends,

It is our honour and pleasure to welcome you to the international conference **"International Conference on Chemical and Behavioral Addictions".** The conference is organized by Poznan University of Medical Sciences and is held as a three-day event in Poznan, Poland, March 9–11, 2023.

Addiction represents a huge area of investigation for researchers from many disciplines.

The theme of the conference focuses on addiction and covers both the field of science basic (molecular biology, biochemistry, neurobiology, toxicology, epidemiology) and applied (psychiatry, clinical toxicology), as well as activities related to the implementation of programs preventive and therapeutic (in the field of pharmacotherapy and psychotherapy). The conference is interdisciplinary.

"**International Conference on Chemical and Behavioral Addictions 2023**" is a unique event that gives more information about addictions and recent advancements in therapy. This conference is anticipating participants from various regions of the world to have a global addictions networking. The main focus to organize this forum is to bring professors, doctors, scientists, therapists, health promotion leaders, students, and delegates to exchange their research ideas, discussions, and developing the principles of modern addiction treatment.

International Conference on Chemical and Behavioral Addictions is scheduled for three days with keynote/plenary presentations, oral/poster presentations, roundtable discussion, and workshops. It is a time to explore more recent innovations and advancements in understanding addiction treatment and recovery. We wish the meeting will offer a unique opportunity for direct communication between scholars, favoring personal contacts between younger and experienced researchers on advanced research topics.

I wish you an enjoyable time at the conference in Poznan!

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PROGRAMME

Day I – Thursday, 9th March 2023

08.00–15.30 Registration

09.00–09.30 OPENING CEREMONY

09.30–10.30 OPENING LECTURE:
Prevention science and implementation of evidence based interventions
Peer van der Kreeft (Social Work, HOGENT University College Ghent, Belgium)

10.30–11.00 *Coffee break*

11.00–12.30 SESSION I

Chair: Prof. Małgorzata Filip, Peer van der Kreeft

11.00–11.20 Anaesthesia in drug addiction and substance abuse by anaesthesiologists
Paweł Sobczyński (I Department of Anaesthesiology and Intensive Care, Poznan University of Medical Science, Poznan, Poland)

11.20–12.00 Psychoactive substances abuse and addictions: a clinical toxicologist´s perspective
Dorota Klimaszyk (Toxicology Department F. Raszeja City Hospital, Poznań, Poland)

12.00–12.15 Exposure to tobacco smoke, consumption of alcoholic products, and selected chronic diseases in women
Krystyna Tyrpień-Golder

12.15–12.30 Methadone – pain reliever and substitute medication or narcotic?
Karolina Mrochem

12.30–14.00 *Lunch break*

POSTER SESSION, hall

14.00–15.30 SESSION II

Chair: Prof. Krystyna Tyrpień-Golder, Rafał Sibiak MD

14.00-14.45 Women watch online pornography, too – but why?
Piotr Rzymski (Department of Environmental Medicine, Poznan University of Medical Sciences, Poznan, Poland)

14.45–15.00 The impact of Internet use on the emotional state of young men
Natalia Tomska

15.00–15.15 Analysis of the relationship between *DRD2*, *ANKK1* and *NTRK3* genes polymorphism and problematic Internet use by young men
Aleksandra Rył

15.15–15.30 Assessment of the risk level of suicidal behavior among adolescents
Magdalena Kozłowska

Day II – Friday, 10th March 2023

08.00–17.30 Registration

09.00–10.30 SESSION III

Chair: Prof. Krzysztof Szyfter, Joanna Nowakowska MSc

09.00–09.45 Impact of maternal diet on offspring health with a focus on the development of cocaine use disorder
Małgorzata Filip (Department of Drug Addiction Pharmacology, Maj Institute of Pharmacology, Polish Academy of Sciences, Krakow, Poland)

09.45–10.00 The role of the dopaminergic receptor system in the inhibitory effect of cannabidiol on alcohol tolerance development in rats
Michał Szulc

10.00–10.15 Effect of active and passive smoking on nitrosative stress levels and oxidative stress index (OSI) in a group of young adults
Magdalena Szumska

10.15–10.30 Smaller corpus callosum area and lower brain parenchymal fraction in alcohol-dependent men with memory and visual attention difficulties
Natalia Nowaczyk

10.30–11.00 *Coffee break*

11.00–12.30 SESSION IV

Chair: Prof. Mariusz Jędrzejko, Aleksandra Kurowska

11.00–11.45 What is new in tobacco smoke-associated laryngeal cancer?
Krzysztof Szyfter (Institute of Human Genetics of the Polish Academy of Sciences, Poznań, Poland)

11.45–12.00 Medical students´ awareness of smoking addiction
Paweł Mroczek

12.00–12.15 Legal and toxicological aspects of GHB versus GBL use
Małgorzata Wacławik

12.15–12.30 Changes in eating habits, alcohol consumption and cigarette smoking during COVID-19 lockdown in Poland
Aleksandra Sidor

12.30–14.00 *Lunch break*

14.00–15.30 SESSION V

Chair: Prof. Ewa Florek, Assoc. Prof. Krzysztof Kus

14.00–14.45 Medical databases in real healthcare
Krzysztof Kus (Department of Pharmacoeconomics and Social Pharmacy, Poznan University of Medical Sciences, Poznan, Poland)

14.45–15.00 Unplugged – a Comprehensive Social Influence programme for schools – Polish experience
Marta Szukalska

15.00–15.15 The cotinine concentration in urine, anthropometrical data and selected clinical variables in hospitalised patients due to alcohol dependence
Michał Zaborowski

15.15–15.30 Presentation of MEDSON Company
Krzysztof Kowalski (MEDSON)

15.30–16.00 *Coffee break*

16.00–17.30 WORKSHOP

Certified methodological workshops: Cyber disorders – cyber addictions. Diagnosis of problem behaviors, prevention. Modeling children´s relationships – digital technologies – (workshop in Polish)
Mariusz Jędrzejko, Agnieszka Taper

Day III – Saturday, 11th Mar 2023

09.00–10.30 SESSION VI

Chair: Prof. Piotr Rzymski, Dr Jaroslaw Romaniuk

09.00–09.45 Illicit drugs and the environment: A toxic relationship
Halina Falfushynska (Marine Biology Department, Institute of Biological Sciences, University of Rostock, Rostock, Germany)

09.45–10.00 Selected alternative materials used for determination of toxic substances and drug of abuse
Marta Szukalska

10.00–10.15 Methamphetamine use in adolescent ADHD: a case study
Rahul Pawate

10.15–10.30 Hypothalamus-pituitary-adrenal axis in Internet addiction
Sandra Nowak

10.30–11.00 *Coffee break*

11.00–12.30 SESSION VII

Chair: Prof. Halina Falfushynska, Assoc. Prof. Michał Karlik

11.00–11.45 Trauma informed social work approach in addiction treatment
Jaroslaw R. Romaniuk (Joseph and Morton Mandel School of Applied Social Sciences Case Western Reserve University, Cleveland, Ohio, USA)

11.45–12.15 The young generation in the „chasing" of risk – phenomena, trends, directions of prevention
Mariusz Jędrzejko (Center for Social Prevention, Milanówek, Poland)

12.15–12.30 Neuroplasticity in the biopsychosocial framework and the intersection of substance use
Rochanne Vincent

12.30 CLOSING AND AWARD CEREMONY

POSTER SESSION, hall

The Addictive alchemy of cChocolate: investigating the most important chemical compounds that drive dependence
Alina Cherniienko

Loperamide should stay over-the-counter medicine? About clinical symptoms of overdose one of the most commonly use anti-diarrheal medicine
Paulina Nowak

Damage specific to the perinatal period during the prevalence of fetal alcohol syndrome
Marta Witkowska

Impact assessment authors preventive addiction program for school children
Magdalena Kozłowska

Peer to Peer Support Fostering Active Ageing – as addiction prevention program among the elderly population
Marta Szukalska

Testing and assessment of designer drug use among adolescents
Marta Szukalska

Are vaccines against drugs an option in the treatment of chemical addictions?
Dominika Sikora

Prof. Halina FALFUSHYNSKA is a Ukrainian state-honored scientist and technology worker. She works in the field of experimental toxicology, biochemistry, and environmental sciences. She's a vice-rector for Research and International Relations at Ternopil Volodymyr Hnatiuk National Pedagogical University. She co-authored nearly 200 peer-review publications and developed 16 patents. In 2015, Prof. Falfushynska was awarded by the Fulbright Program and in 2017 and 2022 by the Alexander von Humboldt Foundation. She directed 20 national and international research and education projects supported by DAAD, Erasmus, the National Research Foundation of Ukraine, and the Ministry of Education and Science of Ukraine. Prof. Falfushynska also serves as an editor for several journals published by Elsevier, Frontiers, and De Gruyter.

Prof. Małgorzata FILIP is a neuropharmacologist employed at the Institute of Pharmacology Polish Academy of Sciences in Krakow as the director and head of the Department of Addiction Pharmacology. From 2020, she is also a corresponding member of the Polish Academy of Sciences and the Polish Academy of Arts and Sciences. She is the editor-in-chief of Pharmacological Reports, an international journal from the JCI list that publishes research results in the field of experimental and clinical pharmacology.

Her research interests concern the pathogenesis of mental and neurological diseases, the impact of the environment (stress, addictive substances, modified diets) on the functioning of the animal brain and the search for factors heralding neurodevelopmental diseases within the vascular network of the animal brain.

The total scientific output includes >300 publications from the JCR list, the total IF >770, and the Hirsch coefficient, IH = 42 (Scopus).

Prof. Mariusz JĘDRZEJKO, special educator and sociologist, addiction diagnostician and therapist. He manages the Support Center for Children and Adults with Addictions and Disorders in Józefów. Scientific director of the Center for Social Prevention. The area of scientific interest is the etiology, development and prevention of addictions and risky behaviors of children and adolescents. Author and co-author of over 200 scientific and popular science studies on the problems of addiction, social pathologies and the impact of socio-cultural changes on problematic and risky behaviors, as well as the social condition of the family. Creator of the terms "boosters" and "galerianki". Traveler.

Dr n. med. Dorota KLIMASZYK in 1996 graduated from the Faculty of Medicine of the Poznań University of Medical Sciences in Poznań. In 2005, she obtained the title of doctor of medical sciences, and the subject of her doctoral thesis was the correlation of carbamazepine and 10,11-epoxide levels in blood serum with the clinical picture of carbamazepine poisoning.

Since 1998, she has been working and on duty at the Toxicology Ward with the Toxicological Information Center of the Municipal Hospital of F. Raszeja in Poznań, she also serves as the deputy head of the branch.

Since 2010, she has been a provincial consultant in the field of clinical toxicology in the Kuyavian-Pomeranian Voivodeship.

She is the author of several dozen articles and the editor and author of the chapter on poisoning in the textbook "Internal Diseases" by Szczeklik in Polish, Canadian, Ukrainian and Spanish versions.

Peer van der KREEFT, a social educator, was 25 years head of prevention at De Sleutel, a major drug care organisation in Belgium until 2011 when he was appointed as a full time lecturer and researcher at the University College Ghent (HOGENT).

Peer has served at the basis of lifeskills interventions like Lions Quest in Europe in the late eighties and designed with a multicultural group of authors Unplugged in the beginning of this century. He published children's stories to start prevention at very early age as well as articles in scientific and popular journals.

Internationally, he presided the EU Prevnet Network from 2002–2006, and has led the EU-DAP Drug Abuse Prevention Faculty project for international adaptation and training of trainers. In 2017 he took the lead of the European Universal Prevention Curriculum adaptation process. The same year he wrote UNODC's Line Up Live Up manual on life skills through sports activities for prevention of drugs, crime and violence. Successful prevention tools are now rolled out in Europe, Russia, South-West Asia, Latin-America, the Middle East, North-, West-, South-Africa and Pakistan.

Peer has been awarded the EUSPR Honour for Leading European Prevention Science Practitioner in 2015. He presided the board of the European Society for Prevention Research from 2019 until 2022, when he happily retired.

Krzysztof KUS, assistant professor (dr hab. n. farm.) - Head of the Chair and Department of Pharmacoeconomics and Social Pharmacy – Poznan University of Medical Sciences. He deals with the practical application of Evidence-Based Medicine (EBM) and medical databases (MBD) in open and inpatient treatment. His interests also include the economic aspects of medical services, the valuation and evaluation of innovative treatment methods, and the pharmacology of mental diseases - research on animal models. He defended his doctorate at the Faculty of Pharmacy at the Medical University of Poznań in 2000: Comparison of the influence of representative psychotropic, classic and new generation drugs on memory and other higher nervous functions in rats. He obtained the postdoctoral degree in pharmaceutical sciences in 2015 based on a scientific achievement (series of works) entitled "Mood stabilizers, antipsychotics, and antidepressants as new generations of drugs used in the treatment of selected mental diseases." Most of the research was carried out on advanced animal models. The promoter of Academic Entrepreneurship on behalf of the Rector of Poznan University of Medical Sciences - searching for innovative projects for industry and the Medical University. Expert in the Smart Growth Operational Program 2014-2020. Member of the Team of External Experts for Delphi Analyses of the National Program Foresight Poland 2020. From 2021, President of the Electors of the Polish Pharmacoeconomic Society. Author of over 140 publications and books and over 150 scientific reports on the animals (about half). Most research issues concern pharmacological effects, e.g., effects on memory, mood stabilizers, and schizophrenia (animal models). The other side of the investigation concerns pharmacoeconomic (e.g., costs, quality of life, clinical and cost-effectiveness and medical data bases). Total IF = 161.352 H-index = 17, Sum of Times Cited: 678.

Jaroslaw R. ROMANIUK, Ph.D., LISW-supv. LICDC, is a researcher and educator in the areas of neuroscience and social work. He has worked in the positions of therapist, manager, and developer of substance abuse treatment programs in hospitals and community organizations. Currently he is a lecturer at the Mandel School of Applied Social Sciences, Case Western Reserve University in Cleveland, Ohio.

Faculty Web Page: https://case.edu/socialwork/about/directory-faculty-and-staff/jaroslaw-richard-romaniuk

Prof. Paweł SOBCZYŃSKI is a specialist in Anaesthesiology and Intensive Care. His Ph.D. dissertation (1994) - "The use of esmolol to prevent haemodynamic disturbances in patients undergoing abdominal aortic reconstruction", and Habilitation/Readership (2002) – "Studies on mechanisms and prevention of lung inju-ry in patients undergoing cardiopulmonary bypass". Actually he is a chairman of Department of Anaesthesiology and Intensive Therapy Poznan University of Medical Sciences, Poznań, Poland.

His postgraduate training included: Training in haemodynamic and metabolic aspects of cardiopulmonary bypass at Christian Albrechts University, Kiel, Germany, Oxford Regional Training Scheme in Anaesthetics for Overseas Doctors, The Horton General Hospital NHS Trust, Banbury, UK.

Prof. Krzysztof (Chris) SZYFTER is a molecular biologist working for the Institute of Human Genetics of the Polish Academy of Sciences and partly for Clinic of Otolaryngology, Poznań University of Medical Sciences.

Fields of research interest:

– molecular epidemiology (DNA damage and repair, mutagenicity, carcinogenesis, occupational exposure),
– biology and genetics of head and neck cancer (tobacco smoke carcinogens, polymorphism of genes involved in carcinogen activation, detoxication and DNA repair; identification of gene role in head and neck cancer risk and further progression),
– genetics of hearing loss,

Over 250 research publications (including: Carcinogenesis, Mutation Research, Human Mutation, Eur. Arch. Otorinolaryng., Oral Oncol., Free Radic. Res.) review papers and book chapters published. Served as guest editor of Mutation Res., Genetica Polonica and Biomolecules. Member of editorial board of Eur. Arch Otorhonolaryng. and Journal of Applied Genetics.

Research interships in Edinburgh (UK), Moscow (Soviet Union), Gatersleben (GDR), Leiden (The Netherlands), Budapest (Hungary), Helsinki (Finland) and Stockholm (Sweden).

Cofounder and head of Mutagenesis section of the Polish Society of Genetics. Past-president of the European Environmental Mutagen Society EEMS).

Abstracts

The addictive alchemy of chocolate: investigating the most important chemical compounds that drive dependence

Cherniienko A.*, Pawełczyk A., Zaprutko L.

Poznan University of Medical Sciences, Pharmaceutical Faculty, Department of Organic Chemistry, Grunwaldzka 6, 60-780, Poznań, Poland

*corresponding author: 90450@student.ump.edu.pl

Chocolate has unique place in our culture – it is one of the most popular and desired, but troublesome, meals. Chocolate elicits pleasant sensations, decreases stress and elevates mood. Furthermore, compared to other high-sugar and high-fat meals, chocolate stimulates specific brain activity, engaging brain regions that respond to craving-inducing stimuli, and is thus more likely to induce an addictive-like eating response. Fat and sugar have been shown to boost both dopamine and opioid neurotransmitter systems (NS), which govern rewarding potential of foods. The dopamine NS increases the urge to eat, whereas the opioid NS enhances hedonic value of meal. As a result, appearance, smell, and taste – together activate motivational and hedonic reward processes, resulting in pursuit and consumption. Chocolate's potential to induce "addictive-like" eating behaviour is triggered by its components, but also increase in added sugar enhances this ability [1].

Chocolate includes several active ingredients (methylxanthines, biogenic amines, and cannabinoid-like fatty acids), which have potential to elicit cravings. The primary psychoactive compounds are methylxanthines, including caffeine and theobromine. They could activate brain's reward system, leading to pleasure through dopamine release [2]. One of the most notable chemicals that may contribute to its addictiveness is 2-phenylethylamine, structurally similar to amphetamines, which stimulates the release of dopamine and other neurotransmitters. Chocolate also contains anandamide, with similar activity to tetrahydrocannabinol – the psychoactive compound from marijuana. Other compounds include tryptophan and serotonin, involved in regulating mood, and endorphins, which give euphoria. According to some hypotheses, chocolate cravings generally are reaction to nutritional deficit (e.g., magnesium). These substances and others interact to create complex interplay that leads to chocolate "addiction" [3].

Chocolate craving is complex phenomenon influenced by various genetic, epigenetic, and environmental factors. Additionally, it's important to note that chocolate addiction is not clinically recognised disorder, and scientists are still studying phenomenon.

References:

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2. Smit, H.J.; Gaffan, E.A.; Rogers, P.J. Methylxanthines Are the Psycho-Pharmacologically Active Constituents of Chocolate. Psychopharmacology 2004, 176, 412–419, doi:10.1007/s00213-004-1898-3.
3. Nuno, R.-N.; "Chocolate: Psychopharmacological Aspects, Mood, and Addiction". Chocolate in Health and Nutrition. 2013. 7: 421–435. doi:10.1007/978-1-61779-803-0_31. ISBN 978-161779-802-3.

The cotinine concentration in urine, anthropometrical data and selected clinical variables in hospitalised patients due to alcohol dependence

Czarnecki D.[1], Długosz A.[2], Sikora A.[3], Chałupka J.[3], Zaborowski M.[2]*, Cukrowska J.[4], Marszałł M.[3], Ziółkowski M.[1]

[1] *Department of Preventive Nursing, Collegium Medicum, Nicolaus Copernicus University, Torun, Ignacego Łukasiewicza 1, 85-821 Bydgoszcz, Poland,*

[2] *Faculty of Chemical Technology and Engineering, Bydgoszcz University of Science and Technology, Seminaryjna 3, 85-326 Bydgoszcz, Poland,*

[3] *Department of Department of Medicinal Chemistry, Collegium Medicum, Nicolaus Copernicus University, Torun, Marii Skłodowskiej-Curie 9, 85-094 Bydgoszcz, Poland,*

[4] *Collegium Medicum, Nicolaus Copernicus University, Torun, Ignacego Łukasiewicza 1, 85-821 Bydgoszcz, Poland*

*corresponding author: miczab001@pbs.edu.pl

Smoking cigarettes is a huge health problem for the population. Smoking cigarettes is frequently behaviour in the people with alcohol dependence. The stationary alcohol dependence therapy is the most focused on the abstinence of alcohol, but not smoking cessation.

The study aimed to assess the cotinine concentration in urine, anthropometry data and the selected clinical variables in patients with alcohol dependence.

Material and methods. We studied 26 patients who were hospitalised because of alcohol dependence. Patients were studied in the first 15 days of hospitalisation (14 men who smoked cigarettes) and in the last 15 days of hospitalisation (12 men who smoked cigarettes). In each patient, it was assessed the cotinine concentration in urine with chromatography method, the anthropometrical data (e.g. body mass, BMI, fat mass), the laboratory tests in the blood (e.g. cholesterol, creatinine), the dynamic spirometry, the CO% concentration in exhaled air and psychological variables (e.g. nicotine craving (TCQ scale), anxiety and depression symptoms).

Results. A comparison of cotinine concentration in urine was shown that patients who smoked cigarettes had more levels of cotinine in the first days than the last days of hospitalization (2105.86 vs. 1632.84 ng/ml; $p=0.064$). In all patients, Pearson correlation showed that cotinine concentration was associated with spirometry data FEV1/FVC ($r= -0.498$; $p=0.011$), TCQ score ($r=0.423$; $p=0.035$) or phase angle (o) ($r= -0.424$; $p=0.044$).

Conclusion. The cotinine concentration in the urine of patients smoking cigarettes, who are stationary treatment due to alcohol dependence is higher in the beginning than at the finish of hospitalisation. The cotinine higher concentration (more intensive smoking of cigarettes) is correlated with worse parameters of dynamic spirometry, higher nicotine craving and a lower score of phase angle as a factor of general health status.

Illicit drugs and the environment: a toxic relationship

Falfushynska H.[1]*, Rzymski P.[2]

[1] *Marine Biology Department, Institute of Biological Sciences, University of Rostock, Albert-Einstein-Strasse, 3, Rostock, Germany*

[2] *Department of Environmental Medicine, Poznan University of Medical Sciences, Poznan, Poland*

*corresponding author: halina.falfushynska@uni-rostock.de

The United Nations World Drug Report published in 2022 alarmed that the global market of illicit drugs is steadily expanding in space and scale. Substances of abuse are usually perceived in the light of threats to human health and public security, while the environmental aspects of their use and subsequent emission usually remain in the shadow. However, as with other human activities, drug production, trade, and consumption of drugs leave their mark on nature. Therefore, it is critical to look behind the scenes into the core chemical and biological processes and understand whether and how the use of these addictive compounds may affect non-target wildlife. Illicit drugs, namely psychostimulants (methamphetamines/amphetamines, cocaine, and its metabolite benzoylecgonine) and depressants (opioids: morphine, heroin, methadone, fentanyl), can reach the aquatic environment through wastewater discharge (as they are often not entirely removed during wastewater treatment processes) and continue to circulate in nanomolar concentrations, potentially affecting aquatic biota. Exposure to such xenobiotics can induce oxidative stress and dysfunction to mitochondrial and lysosomal function, distort locomotion activity by regulating the dopaminergic and glutamatergic systems, increase the predation risk, instigate neurological disorders, disbalance neurotransmission, and produce histopathological alterations in the brain and liver tissues, similar to those described in mammals. Hence, the drugs-related multidimensional harm to fish should be thoroughly investigated in line with environmental protection policies before it is too late. At the same time, fish (e.g., zebrafish) can be employed as models to study toxic and binge-like effects of psychoactive, illicit compounds.

Trauma informed social work approach in addiction treatment

Farkas K.J., Romaniuk J.R.*

Jack, Joseph and Morton Mandel School of Applied Social Sciences Case Western Reserve University, Cleveland, Ohio, USA

*corresponding author: rr3@case.edu

For over 50 years, U.S. mental health practitioners and social work educators have become increasingly engaged in assessing and treating the symptoms of traumatic experiences. Often recommended are manualized psychotherapies with application of exposure and/or cognitive restructuring therapies including Prolonged Exposure (PE), Cognitive Processing Therapy (CPT), Eye Movement Desensitization and Reprocessing (EMDR), and other cognitive behavioral therapies addressing PTSD symptoms. However, many people who are exposed to trauma manage their symptoms by abusing alcohol and other psychoactive substances and/or through gambling behaviors. Dual diagnosis is the term used to describe the co-occurring disorders of trauma- and stressor-related disorders, substance use disorders, and other mental health disorders involving depression and stress. For many trauma-exposed patients, different screening and assessment tools addressing problems such as guilt, shame, and moral and spiritual injury should be used along with integrated treatment modalities for trauma, addiction, and other mental health symptoms. In the US, social work education focuses on skill development in the assessment and treatment of dual disorders to address the needs of these populations. Recent neuroscience research on memory reconsolidation may be another opportunity to develop therapies for anxiety and addiction related to traumatic experiences. There are also therapies known to be as effective in dealing with stress and anxiety but that are not well accepted for trauma treatment, such as mindfulness and yoga. This presentation will review the "Bottom-Up" interventions and other holistic, therapies that are well accepted by treatment-seeking clients to address both addiction and trauma symptoms and to improve outcomes in the treatment of trauma, substance use, and other mental health disorders. Evidence and principles from neuroscience as well lessons from social work education will be integrated to support therapies that address fear, trauma, and maladaptive coping approaches.

The young generation in the "chasing" of risk – phenomena, trends, directions of prevention

Mariusz Jędrzejko

Center for Social Prevention, 21B Stanisława Staszica, 05-822 Milanówek, Poland

corresponding author: mariusz@cps.edu.pl

The author attempts to assess the types and scale of risky behaviors of children and adolescents, with particular emphasis on the use of psychoactive substances, stimulants and abuse of digital technologies.

Based on the latest data and own research, he presents the determinants of these behaviors, the interrelationships between the types of risk and educational models and problems in families. In the conclusions, it indicates the desired legislative, functional, educational and upbringing solutions.

Psychoactive substances abuse and addictions: a clinical toxicologist's perspective

Dorota Klimaszyk

Toxicology Department,
F. Raszeja City Hospital in Poznań
corresponding author: dklimaszyk@gmail.com

Toxicology Department in Poznań is one of a few poison treatment centers in Poland. These highly specialized inpatient units are capable of caring for the most complex cases of poisonings. Majority of hospitalizations in our ward result from intentional or suicidal intoxications so there's a need of an integral, multidimensional, and personal approach for these patients. People who deliberately overdose or using drugs recreationally have a high prevalence of preexisting psychiatric disorders, and it is common for these patients to develop a psychiatric disturbance (e.g. delirium) during their admission.

Recreational poisonings in adults are second in frequency to deliberate self- poisoning with alcohol and new psychoactive substances being the most common agents used. Pain killers, benzodiazepines and other psychotropic medications such as antidepressants, anxiolytics, stimulants, antipsychotics and mood stabilizers also are used as recreational compounds or drugs of abuse and result in serious toxicity.

Many of patients treated in toxicology ward suffer from dual diagnosis which means both a mental disorder and an alcohol or drug problem. About half of people who have a mental disorder will also have a substance use disorder and the interactions of the two conditions can worsen both.

In presentation overview of clinical problems resulting from abuse and addictions in poisoned patients will be presented.

References:

1. Beaumont G., Hetzel W.: Patient at risk of suicide and overdose. *Psychopharmacology* 1992; 106: S123–126.
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Prevention science and implementation of evidence based interventions

Peer van der Kreeft

Social Work, HOGENT University College Ghent, Belgium
corresponding author: peervanderkreeft@hotmail.com

This address describes the background and rationale of the European Prevention Curriculum (EUPC). It turns to the need of training the workforce of prevention at policymaker and implementer's level.

The EUPC1 is result of an adaptation process of the robust Universal Prevention Curriculum (UPC) to EU needs and context. Differences between the USA base of the extensive UPC and European ethics and characteristics of substance use prevention will be recognized in the manual and the training outlines and structure.

There has been significant progress in developing prevention science, in designing and disseminating evidence based interventions. They are at hand, however there is no culture of prevention2 in the education or public health sector: interventions with proven effectiveness are scarcely implemented or neglected and often the choice is even made for counterproductive, sometimes commercial, approaches involving scare tactics or predominantly providing information.

Training is a key instrument to shift this policy and practice, implying standardization and manualization. We will look at the EUPC training concept and structure, hosted by EMCDDA. And we will go into the background and practice of the EU-Drug Abuse Program (EU-Dap) network. This training network serves to implement the widely used school based Unplugged3 intervention. Interesting findings and experiences regarding adaptation, training, implementation and evaluation bring principles and science to the practical level of the teacher and the prevention worker.

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Impact assessment authors preventive addiction program for school children

Kozłowska M.*, Szukalska M., Florek E.

Laboratory of Environmental Research, Department of Toxicology,
Poznan University of Medical Sciences,
Dojazd 30, Poznan, Poland
*corresponding author: magdalena_kozlowska@onet.pl

Among children and adolescents to alcohol, tobacco and drugs is an important subject. Addictions are not getting weaker and affect younger users. In addition to biological conditions, there are also psychological ones. According to social learning theory might be claimed that behaviour imitation like smoking tobacco or drinking alcohol is relevant factor to make an initiation. It can be told about a global problem of smoking in teens group because it is estimated that one of third teens smoke tobacco and nearly 25% their first cigarette smoked by they will have been 10 years. Recent reports show the 47% young Europeans consumed alcohol at the age 13 years or earlier. Addictive substances are fatal consequences distributed experimental is especially seen in groups of teens.

The purpose of the study was made the assessment of effectiveness of the proprietary preventive program addressed to school youth about addition. The study group consisted of 274 students 16–19 years Poznan high school where experiment was made twice, before and after

introduce consisted of 35 questions. The questions concerned frequencies of consuming psychoactive substances (alcohol, tobacco, drugs). It was examined the ratio of the students to school, peers, teachers, parents/guardians and themselves. Socio-demographic data was collected and also information about factors connected to using psychoactive substances.

As a result of the implementation of the preventive program has shown significant decline number of students who declared not drink alcohol in last month. No relevant statistical differences were found in terms of the intensity of the tendency risk behaviour. After the participation of students was demonstrated significant differences in terms of the strengths of tendency to argument (decrease) and the sense of consistency (increase).

Methadone – pain reliever and substitute medication or narcotic?

Karolina Mrochem

Department of Forensic Medicine and Toxicology,
Medical University of Silesia,
Poniatowskiego 15, 40-055 Katowice, Poland
corresponding author: kmrochem@sum.edu.pl

According to recent reports released by the EMCDDA, about 1 million Europeans used heroin or other opioids each year, and it is estimated that as many as half of them had entered drug rehab. The rate of use for opioids is lower than for other drugs, however, it was the presence of opioids that was found in as many as three-quarters of the fatal overdoses reported in the EU in 2021.

One of the addiction treatments used in Europe is substitution treatment. For opioid addiction most common evidence-based instrument is methadone therapy, but there are increasing reports of methadone adulteration and abuse, which is a cause for concern.

Also in the expert work of the Department of Forensic Medicine and Toxicology in Katowice, there has been an increase in the number of cases where methadone was detected in biological material. Moreover there is an increase in the number of deaths caused by its use. The purpose of this study is to present the problem of methadone intake for non-medical purposes, based on the results of expertise issued in 2016–2021/22.

The studied biological material came from 24 people who took methadone-containing preparations. The analysis was carried out using LC-MS. As a result of the analyses, methadone was determined in the blood and urine samples in concentrations: 20–2670 ng/mL and 80–19480 ng/mL, respectively. Twenty-two cases showed the presence of other drugs in addition to methadone, including tramadol, morphine, codeine, clonazepam, diazepam, and oxycodone.

In conclusion, the consequences of methadone abuse have negative effects on patient outcomes, somatic complications related to drug injection, and the risk of infection with bloodborne viruses. Thus, the goal becomes to achieve the optimum between maximizing access to rational medical use while minimizing abuse.

Medical students' awareness of smoking addiction

Mroczek P.*, Janoszka B., Tyrpień-Golder K.

Department of Chemistry,
Faculty of Medical Sciences in Zabrze,
Medical University of Silesia,
41-808 Jordana str. 19, Zabrze, Poland
*corresponding author: d201099@365.sum.edu.pl

Since the introduction of e-cigarettes, they have become popular in a short period of time, especially among youth [1]. They are considered as a healthier nicotine delivery system than cigarettes [2]. They were also supposed to be helpful in quitting smoking. However, studies have shown that they are a source of carcinogens such as, formaldehyde and acetaldehyde and many others [3]. Damage to airway epithelium by formaldehyde is a known precursor to cancer development, and the additional content of acetaldehyde and acrolein in e-cigarette aerosol may intensify this effect [4]. Other carcinogens found in smoke are included benzo(a) pyrene, nitrosamines and heavy metals [5].

Seventy-nine medical students, women and man, between the ages of 19 and 37 took part in a survey. Of those surveyed, 28 reported smoking traditional cigarettes and 21 reported using e-cigarettes. Most e-cigarette smokers (52.4%) use less than 2 ml of liquid per day. Ecigarettes are most often used at parties and in combination with alcohol. More than 90% of e-smokers smoke in rooms where non-smokers are present. Nearly 91% of respondents were passively exposed to e-cigarette vapor. Regarding the toxicity question of compounds formed during the process of liquid vaporization, most respondents answered "don't know." After that the most common answer was "carcinogenic compounds" without naming them. Only a few people mentioned the names benzo(a)pyrene, benzene or polycyclic aromatic hydrocarbons, and some people mentioned heavy metals.

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Methamphetamine use in adolescent ADHD: a case study

Neagoy D., Pawate R.*, Zakowicz P.

Department of Psychiatry,
Poznan University of Medical Sciences,
Collegium Maius, Fredry 10, 61-701, Poznan Poland

*corresponding author: Yash.pawate15@gmail.com

ADHD is characterized by deficits in multiple neural pathways, particularly the dopaminergic reward circuit. Patients with undiagnosed ADHD may self-medicate with various drugs including amphetamines, which increase synaptic monoamine neurotransmitters dopamine, norepinephrine, and serotonin, thus rendering them prone to substance use disorder (SUD). This paper presents the case of a 16-year-old girl presenting with methamphetamine addiction, multiple suicide attempts, and symptoms consistent with ADHD (hyperactivity, impulsivity, inattentiveness, and aggression). Following 6 months of methylphenidate therapy, she recovered from methamphetamine addiction. The patient further reported improved cognitive and social function, with remission of impulsivity and aggression. Her positive outcome suggests that expedient diagnosis and treatment of ADHD may help adolescents recover from addiction. Given high rates of co-occurrence, adolescents presenting with SUD should be routinely screened for ADHD.

Smaller corpus callosum area and lower brain parenchymal fraction in alcohol-dependent men with memory and visual attention difficulties

Nowaczyk N.[1]*, Cierpiałkowska L.[1], Mikołajczak M.[2]

[1] *Department of Health Psychology and Clinical Psychology, Adam Mickiewicz University, Szamarzewskiego 89, Poznan, Poland,*

[2] *Faculty of Computer Science, Poznan University of Technology, Piotrowo 3A, Poznan, Poland*

*corresponding author: natalia.nowaczyk@amu.edu.pl

Background. The use of a neuropsychological perspective to describe and explain the significance of the structural changes in men's brains is a less common approach. Probably, the structural changes in the cortex and corpus callosum are differentiate for patients with normal and disordered memory capacity and difficulties in attention.

Methods. Neuropsychological methods were used to examine a group of individuals with alcohol dependence. Neuroimaging was performed using two scanners to obtain T1-weighted images. The cognition profile included three domains: attention (d2 scores), memory – visuospatial (DCS scores) and auditory-verbal (CVLT scores).

Results. The ninety seven men with alcohol use disorder were examined. Alcohol-dependent men with auditory and visual memory disorders had a smaller frontal and posterior part of the corpus callosum areas and lower brain parenchymal fraction. Additionally, among the alcoholdependent men with memory disorders the smaller rostral body of corpus callosum was determined by the longer alcohol abuse duration. On the other hand, the smaller rostral body of corpus callosum was predicted by the older age only in alcohol-dependent men with normal memory. Taking into account all examined individuals were observed a statistically significant associations between visual attention, visuospatial memory and the area of corpus callosum subregions, genu, and isthmus in particular.

Conclusions. The smaller corpus callosum cross-sectional area and lower brain parenchymal fraction (a brain atrophy marker) significantly affects attention and memory difficulties in alcohol use disorder. Longer alcohol abuse duration has also crucial meaning in structural changes of cross-sectional area of corpus callosum and brain parenchymal fraction in alcoholdependent men disordered memory (visuospatial in particular).

Exposure to tobacco smoke, consumption of alcoholic products, and selected chronic diseases in women

Nowak A.[1], Damasiewicz-Bodzek A.[1], Kumaszka B.[2], Przywara-Chowaniec B.[3], Łabuz-Roszak B.[4], Tyrpień-Golder K.[1]*

[1] *Department of Chemistry, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, 40-055 Katowice, Poland,*

[2] *J. Glowatzki Hospital, 47-100 Strzelce Opolskie, Poland,*

[3] *2nd Department of Cardiology, Faculty of Medical Sciences in Zabrze, Medical University of Silesia, 40-055 Katowice, Poland,*

[4] *Department of Neurology, Institute of Medical Sciences, University of Opole, 45-040 Opole, Poland*

*corresponding author: ktyrpien@sum.edu.pl

AGEs are compounds formed in the body when fat and protein combine with sugar. When they accumulate in high levels, they increase the risk of many diseases.

Some of the diseases that are more common in women include systemic lupus erythematosus (SLE) and multiple sclerosis (MS).

The aim of the study was to assess serum concentrations of advanced glycation end-products (AGEs) depending on exposure to tobacco smoke and alcohol in women suffering from such as SLE and MS.

The blood samples were taken from 31 women suffering from SLE and 21 women suffering from MS. Enzyme immunoassay (ELISA) method was used to evaluate concentrations of total AGEs.

In addition, an original questionnaire was used to obtain information about exposure to tobacco smoke and alcohol.

In the case of SLE, average AGEs concentrations in serum do not differ significantly between passive exposure to tobacco smoke and passive exposure to tobacco smoke with alcohol consumption (on average 29.85 ± 0.60 μg/ml and 29.80 ± 4.67 μg/ml, respectively). In women with SLE, serum AGEs concentrations in the absence of any stimulant are even lower (average 26.60 ± 6.78 μg/ml). AGEs concentrations in the case

of both stimulants were the highest (average 32.02±7.67 µg/ml), and slightly lower in the case of alcohol alone: average 31.08±8.36 µg/ml. But the mean concentration of AGEs 31.20±15.51µg/ml in serum of MS patients who consumed alcohol and were not exposed to tobacco smoke was very similar to that of SLE. Moreover, mean AGEs concentration was 21.67±5.60 µg/ml in the absence of exposure to alcohol and tobacco smoke.

There were more smoking women among SLE than MS patients. It can be assumed that alcohol may have a stronger effect on increasing AGEs than exposure to tobacco smoke, however, research needs to be done with more women, especially those with MS.

Loperamide should stay over-the-counter medicine? About clinical symptoms of overdose one of the most commonly use anti-diarrheal medicine

Nowak P.[1]*, Śliwińska-Mossoń M.[2]*

[1] *Department of Medical Analytics, Department of Clinical Chemistry and Laboratory Hematology, Scientific club of Specialized Biological Analyzes, Pharmacy Faculty, Wroclaw Medical University, Borowska 211, 50-556 Wroclaw, Poland*

[2] *Department of Medical Analytics, Department of Clinical Chemistry and Laboratory Hematology, Pharmacy Faculty, Wroclaw Medical University, Borowska 211, 50-556 Wroclaw, Poland*

*corresponding author: paulina.nowak1818@wp.pl, mariola.sliwinskamosson@umw.edu.pl

Loperamide is a synthetic opioid medicine with long history of used in the treatment of diarrhea. In Poland well known in trend names as Imodium instant, Stoperan, Loperamid acts through binding with µ-opioid inhibiting intestinal motility and secretion of mucus. Especially, loperamide as over-the-counter medicine is commonly used for patients with diarrhea due to cancer during chemo- or radiotherapy. Additionally loperamide in a supratherapeutic doses is used off-label to self-treat opioid addiction or for recreational purposes. For many years loperamide were consider as a safe medicine associated with their efficient first pass, low bioavailability and low penetration through blood-brain barrier in therapeutic doses (4 to 16 mg per day). However, in supratherapeutic doses (60 to 800 mg) loperamide may penetrate to the central nervous system and interact with µ-opioid receptors causes euphoria. Moreover loperamide may cause serious symptoms of overdose. One of the most often reported symptoms is heart's dysrhythmia due to prolongation of QT interval. What is more a lot of medicines interact with loperamide, causes rise of this drug in blood and potentiate pharmacological effects which also being unpleasant. A lot of interact with loperamide medicines have the category OTC, what makes impossible to control, thus efficient drug safety politics. For many reports of overdose in the last years, FDA constitutes in 2019 limited packing of loperamide to maintain safety use. Loperamide may be an alternative to opioid abusers used for recreational purposes as well as in self-treatment of opioid addiction. However, increasing dose above the therapeutic dose may be associated with serious health consequences such as dysrhythmia or heart damage. The abuse of loperamide might poses a serious health risk, therefore take into reconsideration of the pros and cons of licensing loperamide as an OTC drug would be necessary.

Hypothalamus-pituitary-adrenal axis in Internet addiction

Nowak S.*, Nowaczyk N.

Adam Mickiewicz University in Poznań, Faculty of Psychology and Cognitive Sciences, Szamarzewskiego 89, 60-568 Poznań, Poland

*corresponding author: sannow2@st.amu.edu.pl

Nowadays, the Internet accompanies people in almost every area of life. Increasing use of the Internet leads to neurobiological changes. What Internet addiction can affect is the hypothalamus-pituitary-adrenal axis.

We reviewed studies that focus on behavioral addictions, specifically Internet addiction by searching Google Scholar, PubMed and PsychInfo. The search used the words "Internet addiction", "Internet addiction and neuropsychology", "HPA Internet addiction".

This review about Internet addiction shows that some studies have included the problem of Internet gaming disorder. However, the assumption is made that both addictions are behavioral, so the neuronal basis may be similar. One study found that Internet addicts have higher levels of cortisol in their blood. The next study showed no difference in cortisol between the Internet disorder group and the control group, but the study showed the hyporeactivity of the HPA axis. The other study presented that groups showed no significant differences on hair cortisol, but in patients with Internet gaming disorder there was a moderate association between hair cortisone concentration and self-reported chronic stress.

Studies have shown that Internet addiction (especially Internet gaming disorder) are related to stress, but do not show the changes in the HPA axis that should be evident. Addict people say about feelings of chronic stress and based on the research they have vulnerability to acute stress and maladaptive responses which are linked with hyporeactivity of HPA axis. These studies had limitiations and all of them used different ways of thinking about Internet addiction.

Analysis of the relationship between *DRD2*, *ANKK1* and *NTRK3* gene polymorphisms and problematic Internet use by young men

Rył A.[1]*, Tomska N.[1], Jakubowska A., Palma J.[3], Rotter I.[1]

[1] *Department of Medical Rehabilitation and Clinical Physiotherapy, Pomeranian Medical University, Szczecin, Poland,*

[2] *Department of Genetics and Pathology, Pomeranian Medical University, Szczecin 71-252, Poland,*

[3] *Department of Human Nutrition and Metabolomics, Pomeranian Medical University, Szczecin, 71-460 Szczecin, Poland*

*corresponding author: aleksandra.ryl@pum.edu.pl

Gene polymorphism may be associated with the occurrence of risky behaviors in terms of Internet addiction. According to the available literature, genes such as DRD2 – dopamine D2 receptor gene, ANKK1 – ankyrin repeat containing dopamine kinase, NTRK3 – neurotrophic tyrosine kinase receptor type 3 influence the development of behavioral risk behavior.

The aim of the study was to analyze the relationship between gene polymorphisms and hormons level that may affect the severity of risky behaviors displayed by young men in the analysis of the frequency of Internet use.

The study was conducted in a group of 427 healthy adult men aged 18 to 30 (Me=24.0) who declared using the Internet. The surveyed men were asked to complete the Problematic Internet Use Test, on the basis of which the men were classified into a group with a specific severity of Internet use problem. The serum concentrations of the following hormones were determined: luteinizing hormone (LH), follicle-stimulating hormone (FSH), testosterone (TT), sex hormone binding protein (SHBG), dehydroepiandrosterone sulphate (DHEAS), estradiol (E2), prolactin (PRL), insulin (I). Serum concentrations of hormones: serotonin (5-HT) and dopamine (DA) were determined by ELISA.

DNA was isolated from the blood for genetic testing, and then the polymorphism of the genes will be determined using the Real Time PCR method: DRD2 – dopamine D2 receptor gene, ANKK1 – ankyrin repeat containing dopamine kinase, NTRK3 – neurotrophic type 3 tyrosine kinase receptor.

The study showed that genetic polymorphism can affect the concentration and hormonal parameters. The ANKK1 gene polymorphism may be a factor that affects the concentration of hormones such as prolactin or dopamine, which may indirectly affect human behavior. DRD2 gene polymorphism may be associated with FSH levels in men. In turn, the polymorphism of the NTRK3 gene may be associated with the concentration of PRL and DHEAS in a man.

Changes in eating habits, alcohol consumption and cigarette smoking during COVID-19 lockdown in Poland

Sidor A.[1]*, Paszyńska E.[2], Rzymski P.[1]

[1] *Department of Environmental Eedicine, Poznan University of Medical Sciences,*

[2] *Departent of Integrated Dentistry, Poznan University of Medical Sciences*

*corresponding author: aleksandrasidor13@o2.pl

The outbreak of the COVID-19 pandemic prompted a series of restrictions aimed at curbing the spread of the virus. The imposed isolation proved to be highly stressful. An online survey (n=1097) was conducted that examined the eating habits of Poles during the pandemic. As many as 43.5% of respondents said they had increased the amount of food they ate, and 52% admitted to snacking more often. It was noted that 14.6% of respondents were more likely to reach for alcohol during the isolation period. A greater tendency to drink alcoholic beverages was observed in addicts. More than 45% of smokers reported an increase in reaching for a cigarette.

Later, a survey (n=2574) was conducted to investigate the oral hygiene care and eating habits of Poles during the COVID-19 pandemic period. Nearly half of the Poles surveyed had not made any visit to a dental office in 2020. Nearly 18% of respondents reported difficulty in making a dental appointment. Overall, 13.4% of respondents noted an increase in eating frequency. One-third of respondents reported sweetening hot drinks with sugar. 80.5% did not report smoking cigarettes. 16% of declared smokers smoked less than one pack of cigarette papers per day. Occasional alcohol consumption was reported by 53.1% of respondents. Both studies clearly indicate that the COVID-19 pandemic period, especially the time of increased isolation, had a negative impact on eating habits.

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Are vaccines against drugs an option in the treatment of chemical addictions?

Sikora D.[1,2], Rzymski P.[1]*

[1] *Department of Environmental Medicine, Poznan University of Medical Sciences, Poznan, Poland,*
[2] *Doctoral School, Poznan University of Medical Sciences, Poznan, Poland*
*corresponding author: rzymskipiotr@ump.edu.pl

Addiction to chemical substances represents a worldwide issue highly detrimental to public health, encompassing legal compounds (e.g., ethanol or nicotine) and illicit drugs (e.g., cocaine, heroin, methamphetamine). Moreover, relapse rates for individuals who enter recovery from a substance dependence are considerable: 40–60% within 30 days of leaving the inpatient treatment center and up to 85% within the first year. The available pharmaco- and psychotherapy methods face numerous challenges, such as limited effectiveness, noncompliance, social stigma, and economic costs. In turn, vaccinology can offer a cost-effective and rapid approach that could potentially prevent adverse consequences of single relapse events in addicts during abstinence. The idea of using targeted immunotherapy in addiction treatment emerged already in the 1960s, but it is only recently that significant advances in this field have been made, also motivated by failures of other treatment methods. Vaccine candidates for drug addiction treatment are based on a hapten, which is typically a structurally modified drug molecule attached to a macromolecular vehicle coupled with an adjuvant. We review the major preclinical studies and clinical trials of vaccine candidates against nicotine, cocaine, methamphetamines, and opioids (including fentanyl, one of the causative agents of the ongoing opioid crisis in the United States). The advantages and challenges of vaccines against addictions are presented, including insufficient immunogenicity or continuation of substance use despite sufficient immune response. Importantly, if efficient vaccines against drug abuse are to be authorized in the future, they will not represent a solution to the roots of the addiction problem but rather a preventive measure of domino effect in the case of the relapse event and will likely have to be used in conjunction with other approaches, particularly psychotherapy.

Anaesthesia in drug addiction and substance abuse by anaesthesiologists

Paweł Sobczyński

University Clinical Hospital (formerly Lords' Transfiguration University Hospital) University of Medical Sciences, Poznań, Poland
corresponding author: psobczynski@ump.edu.pl

Perioperative anaesthetic implications of drug abusing surgical patients are becoming an increasing problem in operating suits. The history of addiction may be difficult to be openly disclosed by the patients. Clinical recommendations regarding anaesthetic management during perioperative period are largely based on anecdotal reports. Regional anaesthetic techniques, nonopioid analgesics are strongly advocated but opioids should not be avoided if clinically indicated. The use of neuraxial opioids can be considered. A "safety net" should be established for the patient when prescribing opioids for outpatient analgesia.

On the other hand, there are many challenges associated with identifying and treating drug dependent physicians. In comparison to other specialities anaesthetists are overrepresented in this population. They account for 5% of all physicians but constitute up to 15% of populations receiving therapy for drug dependency. The main contributing factors are huge workload on the part of anaesthetists, predisposition of drug dependent students to apply for a residency in anaesthesiology as well as easy access to high-potency psychoactive agents in operating theatres and intensive therapy units. Treatment is largely dependent on the type of the drug of abuse. Successful re-entry into medical practice may be as low as 34% for parenteral opioid abusers and 70% for nonopioid addicts. Prolonged follow-up and monitoring is essential to avoid a relapse.

Assessment of the risk level of suicidal behavior among adolescents

Sołomianko D.[1], Futyma M.[1], Nowicka G.[1], Tymińska I.[1], Kozłowska M.[1,2]*, Florek E.[2]

[1] *Center for Psychotherapy and Group Analysis Horyzont, Załuskiego 74/5, Kobyłka, Poland,*
[2] *Laboratory of Environmental Research, Department of Toxicology, Poznan University of Medical Sciences, Dojazd 30, Poznan, Poland*
*corresponding author: magdalena_kozlowska@onet.pl

o the growing number of suicides among youth, is a need for screening test, that may be crucial in suicide prevention. Number of suicides is observed, where in 2021 more 1496 suicidal attempts was made by people under 18 years, in 127 cases it ended by death (which is 77% higher then year before). Problem is significant in small communities like schools, where suicidal thoughts may affect wider groups.

The aim of this research is to determine the level of risk of suicidal behaviour (thoughts, plans, attempted suicide) in adolescents in applicable use, specially designed for schools. The study group consisted 113 students (from Wołomin) in 16–19 and 90 with their parents. The on-line method was used, based on the questionnaire, which consists of two parts, one of them was filled by parents (17 questions) and the second was written by students (24 questions). Questionnaire contained questions about suicidal thoughts, social isolation, the level of relationship with family and the effects of psychoactive drugs on the adolescents functioning. The research was extended to include some professional consultations in order to confirm the relevance of the activities carried out and teen outreach in the group of risk.

The research results indicate the presence of risk factors a little over 5% of the study population. It was demonstrated that awareness of risk among parents and teachers was hardly 1%. No significant correlation was found between

taking psychotrop medicines by youth and suicidal thought. It is important to emphasize very low social awareness of described phenomenon same as growing number of cases.

Selected alternative materials used for determination of toxic substances and drug of abuse

Szukalska M.*, Florek E.

Laboratory of Environmental Research,
Department of Toxicology,
Poznan University of Medical Sciences,
30 Dojazd Street, 60-631 Poznan, Poland

*corresponding author: martan@ump.edu.pl

An important role in the treatment process is played by diagnostics that allows for early diagnosis of poisoning and, consequently, the application of appropriate therapy. The development of analytical methods and laboratory techniques enables the use of new materials in diagnostics and toxicological research.

Matrices such as saliva, hair and nails are an alternative to the blood, urine and faeces commonly used in laboratories. The advantages of the alternative materials are the non-invasive and painless way of obtaining them, which is especially helpful in the case of children or the elderly, for whom it may be difficult to collect traditional analysis materials. Saliva, hair and nails minimize the risk of transmission of infection to medical personnel. In addition, these materials do not require special storage conditions, and the analyzes of skin appendages are not burdened with errors related to short-term changes in concentrations of the substances being determined.

Due to the low concentration of xenobiotics in these materials, it is necessary to use sensitive and expensive measurement methods. In addition, there are still no properly defined reference values for many substances, the determination of which, apart from individual factors, is difficult, among others, applying care treatments. Therefore, the interpretation of test results involving alternative biological materials may be difficult. Further research is needed to optimize and validate the appropriate methods for the determination of compounds in these materials.

Peer to Peer Support Fostering Active Ageing - as addiction prevention program among the elderly population

Szukalska M.[1]*, Kozłowska M.[1,2], Marszałek M.[1], Florek E.[1]

[1] *Laboratory of Environmental Research, Department of Toxicology, Poznan University of Medical Sciences, 30 Dojazd Street, 60-631 Poznan, Poland.*

[2] *Center for Psychotherapy and Group Analysis Horyzont, 74/5 Zaluskiego Street, 05-230 Kobylka, Poland*

*corresponding author: martan@ump.edu.pl

People who have withdrawn from professional life are more prone to addiction. Sometimes addictions are hidden by seniors who do not allow themselves to be helped. Abusing drugs, alcohol or smoking cigarettes has a very negative effect on their health, especially since the body becomes more exposed to serious diseases with age.

Peer to Peer Support (PPS) Fostering Active Ageing Program aims to develop and pilot a methodology and training programs to help older adults to remain active by supporting other older adults (55+) to deal with ageing. The methodology is based on peer to peer group facilitation as well as learning and peer facilitation mediated by the Internet. In addition to the face to face programs that are usually effective, an e-training program is provided in order to reach a higher number of people. For these reasons the partners have decided to develop two different training programs with the same content.

The content of the Training Program for elders on active ageing (face to face and Web based) is structured in modules: How to use the training program; Ageing and you. A selfassessment exercise on your feelings and conditions; Strategies for active ageing: public services, staying connected, virtual communities, financial security, housing, transport, being looked after; Staying healthy: food/physical activity/addictions; Informative self-help resources. The main objective of PPS project was to develop an educational program for older adults on active ageing, available free of charge, with support of trained mentors.

Programs activating the elderly as well as based on health promotion, building constructive relationships in the group, good communication, working with new technologies and spending free time actively, as well as coping with stress and mental crisis, support the prevention of addiction among the elderly.

Unplugged – a Comprehensive Social Influence programme for schools – Polish experience

Szukalska M.[1]*, Kozłowska M.[1,2], Marszałek M.[1], Florek E.[1] and EUDAP Group

[1] *Laboratory of Environmental Research, Department of Toxicology, Poznan University of Medical Sciences, 30 Dojazd Street, 60-631 Poznan, Poland,*

[2] *Center for Psychotherapy and Group Analysis Horyzont, 74/5 Zaluskiego Street, 05-230 Kobylka, Poland*

*corresponding author: martan@ump.edu.pl

The UNPLUGGED is a school-based programme on preventing the use of addictive substances (tobacco, alcohol, drugs) by students was based on the Comprehensive Social Influence Model, as it is based on interaction, integration of life skills and normative views. The content of the program is dedicated to limiting the initiation of stimulant use and/or delaying the transition from experimental to regular use.

The program consists of 12 units, intended to be introduced during classes at school. A new preventive approach includes behavioural exercises to strengthen attitudes and skills that help resist the pressures of substance use. The aim of this approach is to equip young people with the specific means they need to resist social influence and to validate their knowledge of drugs and their adverse health consequences in practice.

The programme has been evaluated in a cluster randomised controlled trial (RCT) involving children aged 12–14 years in seven European countries: Austria, Belgium, Germany, Greece, Italy, Spain and Sweden. There was also a cluster RCT in the Czech Republic involving children with a mean age of 11.8 years. The implementation of the Program brings benefits to Students and their families, schools and the whole society. The evaluation of the program proved that by developing social skills in Students, the rates of substance use and other related educational problems are reduced, and positive family bonds are strengthened.

The interdisciplinary approach creates opportunities for cooperation between teachers of different subjects. In terms of social benefits, well-implemented, effective primary prevention leads to saving lives, preventing disability and saving money spent on treatment and legal combating of problems resulting from the use of addictive substances.

Testing and assessment of designer drug use among adolescents

Szukalska M.[1]*, Kozłowska M.[1,2], Teżyk A.[3], Miechowicz I.[4], Florek E.[1]

[1] *Laboratory of Environmental Research, Department of Toxicology, Poznan University of Medical Sciences, 30 Dojazd Street, 60-631 Poznan, Poland,*

[2] *Center for Psychotherapy and Group Analysis Horyzont, 74/5 Zaluskiego Street, 05-230 Kobylka, Poland,*

[3] *Department of Forensic Medicin, Poznan University of Medical Sciences, 10 Rokietnicka Street, 60-806 Poznan, Poland*

[4] *Department of Computer Science and Statistics, Poznan University of Medical Sciences, 7 Rokietnicka Street, 60-806 Poznan, Poland*

*corresponding author: martan@ump.edu.pl

Designer drug use constitutes one of the fundamental problems of the modern world. Because to devastating health effects physical and mental health and the possibility of impairment of social functions, it is extremely important to assess exposure to psychoactive substances among high-risk groups. Taking into account the specifics of the period puberty belongs to such a group young people. For exposure assessment adolescents on drugs most often questionnaires are used surveys. Checking the credibility of the information indicated by students can be toxicology tests.

Chromatography technique coupled with spectrometry mas (LC-MS) is currently one of the most commonly used methods for detection and labeling of substances psychoactive substances in biological material. In practice, an important issue in toxicological studies selection of the appropriate biological material. Considering the considerations economic and download method samples, an alternative material is increasingly used saliva.

The aim of this study was to evaluate the degree of exposure of adolescents aged 12–14 to psychoactive substances – legal highs, through the analysis of research surveys and qualitative analysis in saliva collected from teenagers. Poznan youth (n=863 students), experimented with boosters at a similar level as respondents of nationwide surveys.

Survey research is enough quick and relatively easy form of evaluation adolescents' exposure to addictive substances. However, it has been proven that it should they can be verified by toxicological analysis of biological material for the presence psychoactive substances.

The role of the dopaminergic receptor system in the inhibitory effect of cannabidiol on alcohol tolerance development in rats

Szulc M.[1]*, Kujawski R.[1], Pacholak A.[2], Czora-Poczwardowska K.[1], Geppert B.[3], Mikołajczak P.[1,4]

[1] *Department of Pharmacology, Poznan University of Medical Sciences, Rokietnicka 3, 60-806 Poznań, Poland,*

[2] *Institute of Chemical Technology and Engineering, Poznan University of Technology, Poland,*

[3] *Department of Forensic Medicine, Collegium Medicum, University of Zielona Góra, Zyty 28, 65-046 Zielona Góra, Poland,*

[4] *Department of Pharmacology and Phytochemistry, Institute of Natural Fibres and Medicinal Plants, Kolejowa 2, 62-064 Plewiska, Poland*

*corresponding author: mszulc@ump.edu.pl

The study aimed to explore the influence of cannabidiol (CBD) on the development of alcohol tolerance in rats. Behavioral and molecular investigations (in selected brain structures: the prefrontal cortex, hippocampus, and striatum) were conducted.

Briefly, rats were treated with ethanol (3.0 g/kg, *i.p.*) and CBD (20 mg/kg, *p.o.*) for nine continuous days. During the whole experiment, measurement of body temperature, sedation (sleeping time), and blood alcohol concentration was measured. It was found that CBD inhibited the development of tolerance to the hypothermic and hypnotic action of alcohol. Also, an increase in blood alcohol concentration after CBD treatment was detected. No such effects of CBD in alcohol-naive (control) rats were observed.

In detail, on a molecular level, in the prefrontal cortex, the levels of D2 and D4 transcripts did not change, while D5 mRNA levels were unspecifically but significantly elevated in all examined groups vs. control. In CBD-administered rats, a significant increase in D1 transcripts was clearly visible. Surprisingly in the hippocampus, in all examined groups, a significantly strong inhibition of transcription of all dopaminergic receptors encoding genes vs. the control group was observed. Combined ethanol and CBD treatment inhibited the D1 and D2 receptors' mRNA levels in the striatum.

CBD revealed its effectiveness in behavioral studies, reducing tolerance development in rats. These observations were confirmed on the molecular level, especially in the striatum, which is at a high value since this brain structure is believed to be a center involved in motor and action planning, decision-making, motivation, reinforcement, and reward perception. As tolerance is considered a prelude to drug addiction, it can be assumed that CBD inhibits alcohol dependence development in rats.

Effect of active and passive smoking on nitrosative stress levels and oxidative stress index (OSI) in a group of young adults

Szumska M.*, Damasiewicz-Bodzek A., Tyrpień-Golder K.

Department of Chemistry, Faculty of Medical Sciences in Zabrze, Medical University of Silesia in Katowice, Poniatowskiego 15 Street, 40-055 Katowice

*corresponding author: mszumska@sum.edu.pl

The presence of xenobiotics of different sources in the human body contributes to the intensification of processes during which reactive oxygen or nitrogen species are formed, resulting in an increased state of oxidative and nitrosative stress. Reactions of free radicals with nucleic acids can result in damage of purine and pyrimidine bases. 8-hydroxy-deoxyguanosine (8-OHdG) is a product of oxidative DNA damage. In protein molecules, tyrosine is oxidized to give various derivatives such as 3-nitrotyrosine or dityrosine.

The organism exposure to oxidative stress can be monitored by measuring redox parameters like the determination of the total antioxidant potential of body fluids using Ferric Reducing Antioxidant Power (FRAP) test. The Oxidative Stress Index (OSI) maybe used to assess overall oxidative-antioxidant processes ratio. Low values of OSI reflect an oxidation state closer to oxidative balance. OSI index increases proportionally with any level of oxidative imbalance.

The study material consisted of serum and urine samples collected from 75 students of the Faculty of Medical Sciences in Zabrze of the Silesian Medical University in Katowice. ELISA and spectrophotometric technique were used to determine 8-hydroxy-deoxyguanosine, 3-nitrotyrosine and dityrosine and OSI.

In the study group of smoking students, the mean concentrations of 3-nitrotyrosine and dityrosine were higher compared to the group of non-smoking students not exposed to tobacco smoke. The mean concentrations of 8-OHdG as well as 3-nitrotyrosine and dityrosine in the samples of passively exposed students were higher than those of smokers and non-exposed to tobacco smoke. The concentrations of 8-OHdG and analyzed markers of nirtrosative stress were compared with markers of oxidative stress: TOS, TAS, FRAP. The results showed that passive exposure to tobacco smoke is a serious source of exposure to not only oxygen but also nitrogen radicals leading to increased risk of oxidative damage to DNA and increased exposure to nitrosative stress.

The impact of Internet use on the emotional state of young men

Tomska N.*, Rył A., Turoń-Skrzypińska A., Szylińska A., Rotter I.

Department of Medical Rehabilitation and Clinical Rehabilitation, Pomeranian Medical University, Żołnierska 54b, 71-210 Szczecin, Poland

*corresponding author: natalia.tomska@pum.edu.pl

Internet addiction is a new psycho-behavioral disorder perceived as repeated or excessive use of the Internet, with a strong and irresistible desire to use the Internet as often as possible. It is leading to considerable negative social, psychological, and health issues. The aim of the study was to assess the impact of problematic Internet use on emotional state. The study involved 500 men aged 18–30 (24.82 ± 3.83). The study was carried out in 2020–2021 in the West Pomeranian region of Poland. The study was conducted using our own original questionnaire regarding the Internet use and other questionnaires i.e., Beck Depression Inventory, Internet Use Test, GAD-7 Generalized Anxiety Assessment Questionnaire, and Buss and Perry Aggression Questionnaire. In the analysis of relationships between IUT problematic Internet use and individual risky behaviors and symptoms in the subjects, statistically significant differences were found between problematic Internet use and anxiety symptoms (GAD-7), depressive symptoms (Beck Depression Inventory), anger, and hostility. In a between-group analysis of statistically significant results, statistically significant differences for both anxiety symptoms (GAD-7) and Beck Depression Inventory symptoms were found for the three IUT problematic Internet use groups. The level of anger (Buss-Perry questionnaire) also had a statistically significant difference between the low and moderate and between the low and high problematic Internet use groups. In the dimension of hostility, all groups differed significantly from each other. Problematic Internet use can lead to symptoms such as anxiety, anger, hostility, and depression. A longer time of Internet activity correlates with higher scores on the Internet Use Test degree of problematic Internet use. There was a correlation between the severity of mild depression symptoms and the occurrence of anxiety, verbal and physical aggression, as well as problematic use of the Internet.

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Neuroplasticity in the biopsychosocial framework and the intersection of substance use

Rochanne L.Vincent

Jack, Joseph, and Morton Mandel School of Applied Social Science Case Western Reserve University, Cleveland, Ohio, USA

corresponding author: rxv166@case.edu

Substance use interventions in the United States (U.S.) vary widely in use for treatment as well as effectiveness in recovery. Often adverse experiences along with an individual's environment contribute to the likelihood of the use of substances. These experiences also influence relapse. Findings from neuroscience on neuroplasticity offer some insight into the potential for the recovery process. Neuroplasticity provides a biological understanding to recovery in mental health and substance use disorders. Framing neuroplasticity and its concepts, brain structure and function, in the biopsychosocial framework provides an understanding into the impact of experience as a catalyst for new connections within the structure of the brain. Environmental factors influence the potential for development of the structure and function of the brain throughout an individual's lifespan. These insights are pivotal to the progress of mental health and substance use social work practice. Specifically, interventions such as repetitive transcranial magnetic stimulation (rTMS) that may target the potential for structural and functional shifts in key components associated with certain behavioral impulses. Currently in the U.S., neuroscience information is infrequently and inconsistently used in substance use and mental health interventions. However, the findings from neuroscience have implications for the intersection of substance use, adverse experiences, and treatment for recovery. Aspects of environmental enrichment associated with modulating neuroplasticity may have implications for the use of polyvagal interventions along with other biologically targeted interventions in substance use treatment. Other implications from findings in neuroplasticity include directing treatment recommendations, social determinants of health, and future research for substance use and mental health recovery.

Legal and toxicological aspects of GHB versus GBL use

Wacławik M.[1], Wielgomas B.[1]*, Wiergowski M.[2]

[1] *Department of Toxicology, Faculty of Pharmacy, Medical University of Gdańsk,*

[2] *Department ofForensic Medicine, Faculty of Medicine, Medical University of Gdańsk*

*corresponding author: Bartosz.wielgomas@gumed.edu.pl

GHB (γ-hydroxybutyric acid) is a potent central nervous system depressant, which acts primarily via binding to 36 768 receptors. With its trace amounts produced endogenously, some countries employing it as a registered therapeutic tool for treatment of narcolepsy, or a form of pharmacological support during detoxification of alcoholics, GHB has earned its (negative) popularity as "date rape" drug, as the ease and cost-effectiveness of its acquisition causes it to be frequently associated with drug facilitated sexual assaults (DFSA). Depending on the oral intake of its dose it can cause symptoms ranging from relaxation and euphoria to loss of motor coordination, to even respiratory depression, coma, and death. GBL (γ-butyrolactone) is an analog and a prodrug of GHB. Aside from being a commonly used industrial chemical, a solvent found in paint and polish removers, it is regularly used for illicit clandestine production of GHB, holding a very high potential for abuse, as it is rapidly (~1 min) metabolized to GHB after ingestion (producing corresponding psychoactive effects), therefore posing as an even more easily accessible GHB substitute for recreational or violent use. While GHB in most countries is currently identified as a drug of abuse, having its manufacturing, possession and distribution defined as illicit, GBL is sparsely recognized as an equally problematic substance with high potential for criminal employment. Limitations regarding the use, purchasing and production of GBL in Europe are not universally imposed and vary from it being readily accessible for purchase without a license as a cleaning reagent, through its distribution being controlled, possession and use being legal unless with the purpose of human ingestion, to GBL being regulated as a controlled chemical, with its possession, production and use being illegal. The presentation highlights the discrepancies in legality regarding GHB and GBL, which contradicts their toxicological similarity.

Damage specific to the perinatal period during the prevalence of fetal alcohol syndrome

Witkowska M.[1,2,]*, Florek E.[3]

[1] *Faculty of Chemistry, Adam Mickiewicz University, 61-614 Poznan, Poland*

[2] *Centre for Advanced Technologies, Adam Mickiewicz University, 61-614 Poznan, Poland*

[3] *Laboratory of Environmental Research, Department of Toxicology, Poznan University of Medical Sciences, 60-631 Poznan, Poland*

*corresponding author: witkowskamr@gmail.com

Europe is the region with the highest prevalence of Fetal Alcohol Syndrome (FAS), because it's estimated at 37 per 10 000 people. According to studies almost, 16% of women in Europe consumed alcohol during pregnancy. Identification and treatment of affected children is associated with professional challenges and with high diagnostic complexity. Significant progress has been made in the field of direct, and meconium markers are considered the most effective method of confirming prenatal alcohol exposure. Since the brain is biologically complex and its development is tightly controlled by epigenetic mechanisms, it's necessary to focus on the specific perinatal damage of fetal alcohol disorders and their epigenetic effects on the brain.

Epigenetic data opens diagnostic and therapeutic possibilities as well as possibilities of prevention and reduction of harm related to risky alcohol consumption. Epigenetic mechanisms play a role in brain development through their ability to share or not share certain parts of the genetic information contained in DNA, thus allowing a cell to express a particular gene or not. Importantly, epigenetic mechanisms are reversible and this reversibility can be the subject of therapeutic approaches, since all stages of brain development are under very strict control of epigenetic mechanisms, and the very activity of neurons is capable of modifying their epigenetic traces.

These studies are still very imperfect and there are many obstacles to drawing lasting conclusions. Nevertheless, it seems that certain gene regions or gene clusters carrying aberrant epigenetic marks after prenatal alcohol exposure (PAE) are being identified in a growing number of studies. A growing body of research shows that there is an imperfect but exploitable parallel between the epigenetic disruptions induced in the developing brain by PAE and those seen in peripheral tissues. Despite the obstacles in the development of therapeutic strategies, there is potential to reverse epigenetic mechanisms.

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978-83-7597-445-4