

PROCEEDINGS OF
VIRTUAL EVENT

THE INTERNATIONAL
CONFERENCE ON

**FUTURE OF
PREVENTIVE MEDICINE
AND PUBLIC HEALTH**

JUNE 21-22
2021

Theme:

Rise in Preventive Medicine and Public Health
Research Market Through New Medical Technologies,
Treatments and Up-to-date Studies Worldwide

Peers Alley Media

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FUTURE OF PMPH 2021

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YOUR FIRST CHOICE FOR RESEARCH INGENUITY

PROGRAM-AT-A-GLANCE

FUTURE OF PMPH
2021

DAY 1

MONDAY, JUNE 21, 2021

Scientific Program

BST – British Summer Time

Preventive Medicine | Public Health and Healthcare | Healthcare, Services and Technologies | Healthcare Innovations | Advanced Healthcare | Digital Health | Primary Care | Occupational Health and Safety | Patient Safety | COVID 19 | Telemedicine | Nursing | Hospital Management | Community Health | Internal Medicine | Women's Health| Gynecology | Midwifery | Psychology and Psychiatric Disorders | Sociology | Sport Medicine | Tropical Disease | Pharmaceuticals | Infectious Diseases

08:45

Opening Ceremony

09:00

Title: Evaluating the efficacy of Tasquinimod in COVID-19

Raphael Udeh, University of Newcastle, Australia

09:20

Title: Hearing screening in preschool and school children in Portugal - A 18-year experience of Coimbra health school, Portugal

Margarida Maria Fernandes Serrano, ESTESC-Coimbra Health School, Portugal

09:40

Title: Biomonitoring of Portuguese firefighters: Levels of exposure to polycyclic aromatic hydrocarbons and potential health risks

Marta Madalena Marques de Oliveira, REQUIMTE-LAQV-Instituto Superior de Engenharia, Instituto Politécnico do Porto, Portugal

10:00

Title: Awareness of isotretinoin use and Saudi FDA pregnancy prevention program in Riyadh, Saudi Arabia: A cross-sectional study among female patients

Alnada Ibrahim, Princess Nourah bint Abdulrahman University, Saudi Arabia

10:20

Title: Photosynthetically controlled Spirulina, but Not Solar Spirulina, inhibits TNF- α Secretion: Potential implications for COVID-19-related Cytokine Storm therapy

Dorit Avni, MIGAL - Galilee Research Institute, Israel

Refreshment Break 10:40-10:55

10:55

Title: Hanlon method for prioritization health problems modified for being used by Non-Governmental development organizations in a rural area in Benin

Adrian Lopez Alba, 12 de Octubre University Hospital, Spain

11:15

Title: Gender differences in the association between serum uric acid, body mass index, blood pressure and kidney functions in a population with prehypertension history: A cross-sectional study

Mochammad Sjabani, Universitas Gadjah Mada, Indonesia

11:35

Title: Therapeutic effect observation of Tiotropium Bromide in the treatment of Overlap Syndrome

Yunchao Huang, The Second People's Hospital of Yunnan Province, China

Ting Wang, The First Affiliated Hospital of Kunming Medical University, China

11:55

Title: Physical symptoms and mental health status in deep underground miners: A cross-sectional study

Jifeng Liu, Sichuan University, China

12:15

Title: Fright management among rehab professionals amid COVID 19

Nazia Mumtaz, Riphah International University, Pakistan

12:35

Title: Evaluation of Picture Archiving and Communication System (PACS): Viewpoints of radiologists in some teaching hospitals

Hamidreza Tadayon, Neyshabur University of Medical Sciences, Iran

12:55

Title: Efficiency in reducing COVID-19 death rate: An application of Technical Inefficiency Effects model across Indian states

Shrabanti Maity, Vidyasagar University, India

Lunch Break 13:15-13:45

13:45

Title: Prevalent health problems among Nepalese under-Ground construction workers

Rajan Ghimire, General Practice and Emergency Medicine, District Hospital, Nepal

14:05

Title: Prevalence and predictors of contraceptives use among women aged (15–49 years) with induced abortion history in Ghana

Mohammed Gazali Salifu, Ministry of Health, Ghana

14:25

Title: From experts to locals hands healthcare service planning in sub-Saharan Africa: An insight from the integrated community case management of Ghana

Francis Dakyaga, SD Dombo University of Business and Integrated Development Studies, Ghana

14:45

Title: Mapping of WHO recommended insecticide resistance in the West Nile Encephalitis, Japanese Encephalitis, Lymphatic Elephantiasis vectors, Culex pipiens complex in the world

Hassan Vatandoost, Tehran University of Medical Sciences, Iran

15:05	<p>Title: Elephant in the room; Comparing total cholesterol, HDL-C and their ratio among ischemic and hemorrhagic stroke</p> <p>Muhammad Ahmad Alamgir, Bahawal Victoria Hospital / QAMC Bahawalpur, Pakistan</p>
15:25	<p>Title: Covid-19 pandemic in Nigeria: Palliative measures and the politics of vulnerability</p> <p>Isaac Omo-Ehiabhi Eranga, Center for Cancers Awareness Campaign, Nigeria</p>
15:45	<p>Title: Narcissism and impeded individuation</p> <p>Karolina Norby, Jungiansk Psykoterapi & Analyse, Denmark</p>
16:05	<p>Title: Low adoption of EHR patient portal in U.S.A adult population: What has social media and digital divide got to do with it?</p> <p>Ahmed Umar Otokiti, Icahn School of Medicine at Mount Sinai Hospital, USA</p>
16:25	<p>Title: Framework for colorectal cancer health needs assessment in Post-Soviet countries</p> <p>Rebecca Pratiti, McLaren Health Care, USA</p>
16:45	<p>Title: Paradigms lost? COVID-19 and the challenges of health care provision</p> <p>Susan B. Rifkin, Colorado School of Public Health, USA</p>
17:05	<p>Title: Demographic profile and service-connection trends of posttraumatic stress disorder and traumatic brain injury in US veterans pre- and post-9/11</p> <p>Hemant Thakur, V.A. Medical Center, USA</p>
17:25	<p>Title: The effectiveness of official development assistance in the health sector in Africa: A case study of Uganda</p> <p>Cyriaque Rene Sobtafo Nguefack, University of Phoenix, USA</p>
17:45	<p>Title: In ovo hyperglycemia causes congenital limb defects in chicken embryos via disruption of cell proliferation and apoptosis</p> <p>Linglin Xie, Texas A&M University, USA</p>
18:05	<p>Title: Exploring & exploiting the homeostasis network orchestration & biomarkers in human health: Disease prevention</p> <p>Bene Ekine-Afolabi, ZEAB Therapeutic LTD, UK</p>

18:25

Title: The health-seeking itinerary of individuals with morbid obesity for bariatric surgery in the public healthcare system

Claudete Aparecida Conz, University of Sao Paulo, Brazil

18:45

Title: Intersection of data technology with humanity – The plight of health disparities

Deborah Guadalupe Duran, NIH/National Institute on Minority Health and Health Disparities, USA

19:05

Title: Physical activity effects on bladder dysfunction in an obese and insulin resistant murine model

Andre Matos de Oliveira, University of Sao Paulo Medical School, Brazil

End of Day 1



DAY 2

TUESDAY, JUNE 22, 2021

Scientific Program

BST – British Summer Time

Preventive Medicine | Public Health and Healthcare | Healthcare, Services and Technologies | Healthcare Innovations | Advanced Healthcare | Digital Health | Primary Care | Occupational Health and Safety | Patient Safety | COVID 19 | Telemedicine | Nursing | Hospital Management | Community Health | Internal Medicine | Women's Health| Gynecology | Midwifery | Psychology and Psychiatric Disorders | Sociology | Sport Medicine | Tropical Disease | Pharmaceuticals | Infectious Diseases

09:00

Title: Putting the 'Good' into Good clinical practice

Tanya Symons, University of Sydney, Australia

09:20

**Title: Pelvic organ prolapse and treatment decisions–
Developing an online preference-sensitive tool to support shared decisions**

Mette Hulbaek Andersen, University Hospital of Sønderjylland, Denmark

09:40

Title: Association between Preeclampsia and Prostatin Polymorphism in Pakistani females

Saima Ejaz, Department of Physiology, University of Karachi, Pakistan

10:00

Title: The maternal referral mobile application system for minimizing the risk of childbirth

Muhammad Ardian Cahya Laksana, Universitas Airlangga, Indonesia

10:20

Title: Factors affecting quality of life among parents having a child with autism spectrum disorder in Jeddah, 2019

Abeer Ahmad Subke, The Joint Program of Saudi Board in Preventive Medicine, Saudi Arabia

Refreshment Break 10:40-10:55

10:55

Title: Disentangling factors in the cross-sectorial workflow of patients with COPD

Bettina Ravnborg Thude, University Hospital of Southern Jutland, Denmark

11:15

Title: High prevalence of intestinal pathogens in indigenous in Colombia

Simone Kann, Medical Mission Institute Würzburg, Germany

11:35

Title: Analysis of COVID-19 clusters related to eating and drinking using a time work flow chart

Tsuchiya Hitoshi, Gunma Paz University, Japan

11:55	<p>Title: Cellular mechanisms of cadmium-induced toxicity and interaction with organic and inorganic nanoparticles Patrizia Guidi, University of Pisa, Italy</p>
12:15	<p>Title: Efficacy and safety of Tocilizumab in severe and critical COVID-19: A systematic review and meta-analysis Soheila Rezaei, Shahid Beheshti University of Medical Sciences, Iran</p>
12:35	<p>Title: A systematic survey of PRMT interactomes reveals the key roles of arginine methylation in the global control of RNA splicing and translation Huan-Huan Wei, Chinese Academy of Sciences, China</p>
12:55	<p>Title: Hematopoietic stem cell transplantation in thalassemia patients: A Jordanian single centre experience Maher Khader Mustafa, Royal Medical Services, Jordan</p>
Lunch Break 13:15-13:45	
13:45	<p>Title: Coxiella burnetii abortion among domestic animals in Iran Saber Esmaeili, Pasteur Institute of Iran, Iran</p>
14:05	<p>Title: Early detection of Covid-19 by wastewater sampling Amir Hossein Mahvi, Tehran University of Medical Sciences, Iran</p>
14:25	<p>Title: Towards prevention of channelopathy based sudden cardiac death and associated disorders in human genetics of Sudden Cardiac Death, the Channelopathies: Today's Perspective and the future Abdullah Abdulrhman Al Abdulgader, Prince Sultan Cardiac Centre Hospital Al Ahsa Hofuf, Saudi Arabia</p>
14:45	<p>Title: Metal doped BiOI based photocatalyst for the degradation of antibiotics and bacteria Neetu Talreja, University of Concepcion, Chile</p>
15:05	<p>Title: Management of public and environmental health using probable engineered protocols to control the airborne transmission of viral-cum-atmospheric pollutants Subhrajit Mukherjee, Indian Institute of Technology Kharagpur, India</p>
15:25	<p>Title: Nitric oxide as a noble drug for the treatment of COVID Jan Mohammad Mir, Islamic University of Science and Technology, India</p>
15:45	<p>Title: Usutu Virus potential vectors and their diversity in Iran: A neglected emerging Arbovirus Davood Keshavarzi, Ahvaz University of Medical Sciences, Iran</p>

Refreshment Break 16:05-16:20

16:20

Title: Self- Care practices and associated factors among adult diabetic patients in public hospitals of Dire Dawa city administration, Eastern Ethiopia
Asmare Getie, Arba Minch University, Ethiopia

16:40

Title: Meningitis as an initial presentation of COVID-19: A case report
Muhammad Hanif, Hayatabad Medical Complex, Pakistan

17:00

Title: Ameliorative effects of African walnut on nicotine-induced reproductive toxicity in rat model
David Chibuike Ikwuka, University of Nigeria, Nigeria

17:20

Title: Photobiomodulation reduces pain in patients with shoulder Tendinopathy
Kristen M Agena, A.T. Still University of Health Sciences, USA

17:40

Title: Decentralized clinical trial case study: A five-stage process for recruiting and completing a site-less clinical study in less time and lower cost than traditional methods
Alex Hilderbrand and Mark Stinson, Patient Activation at 83bar, Inc, USA

18:00

Title: Post COVID-19 MSSA pneumonia
Lidiya Didenko, American University of Antigua, USA

18:20

Title: Reward preferences of the youngest generation: Attracting, recruiting, and retaining generation Z into public sector organizations
Nana Amma Acheampong, University of Maryland Global Campus, USA

18:40

Title: COPD context-aware healthcare systems
Hamid Mcheick, University of Quebec at Chicoutimi, Canada

19:00

Title: Extracellular Vesicles (EVs) and Chagas disease: Trypanosoma cruzi releases different types of extracellular vesicles that distinctly modulate host immune system
Ana Claudia Trocoli Torrecilhas, Federal University of Sao Paulo (UNIFESP), Brazil

End of Day 2

Closing Remarks





**BOOKMARK
YOUR DATES**

**2nd INTERNATIONAL CONFERENCE ON
FUTURE OF PREVENTIVE MEDICINE
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MARCH 24-25, 2022 | LONDON, UK

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M E D I A

THE
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FUTURE OF
PREVENTIVE MEDICINE
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June 21-22
2021

Scientific Abstracts
Day 1

FUTURE OF PMPH 2021

The International Conference on FUTURE OF PREVENTIVE MEDICINE AND PUBLIC HEALTH

June 21-22, 2021

Theme: Rise in Preventive Medicine and Public Health Research Market Through New Medical Technologies, Treatments and Up-to-date Studies Worldwide



Evaluating the efficacy of Tasquinimod in COVID-19

Raphael Udeh¹, Luis García De Gadiana Romualdo²
and Xenia Dolje-gore³

^{1,3}School of Medicine & Public Health, University of Newcastle, Australia

²Hospital Universitario Santa Lucía, Spain

Scope: Quite disturbing is the huge public health impact of COVID-19: As at today [April 4th, 2021], the COVID-19 global burden shows over 130 million cases and over 2.8 million deaths worldwide. Recent evidence shows calprotectin's potential as a therapeutic target, stating that tasquinimod, from the Quinoline-3-Carboxamide family is capable of blocking the interaction between calprotectin and TLR4 & RAGE. Hence preventing the cytokine release syndrome, that heralds the functional exhaustion in COVID-19. Early preclinical studies showed that tasquinimod inhibit tumor growth and prevent angiogenesis/cytokine storm. Phase I – III clinical studies in prostate cancer showed it has a good safety profile with good radiologic progression free survival but no effect on overall survival.

Objectives: Though strategic endeavours have been amplified globally to assess new therapeutic interventions for COVID-19 treatment, the efficacy and safety of tasquinimod in COVID-19 remains to be explored. Hence the primary objective of this trial will be to evaluate the efficacy of

tasquinimod in the treatment of adult patients with severe COVID-19 infections. Therefore, we hypothesize that in COVID-19 adult patients, tasquinimod will reduce the severe respiratory distress associated with COVID-19 compared to placebo, over a 28-day study period.

Methods: The setting is in Europe. Design – a randomized, placebo-controlled, phase II double-blinded trial. Trial lasts for 28 days from randomization, Tasquinimod capsule given as 0.5mg daily 1st fortnight, then 1mg daily 2nd fortnight. I^o outcome - assessed using six-point ordinal scale alongside eight 2^o outcomes. 125 participants to be enrolled, data collection at baseline and subsequent data points, and safety reporting monitored via serological profile.

Significance: This work could potentially establish tasquinimod as an effective and safe therapeutic agent for COVID-19 by reducing the severe respiratory distress, related time to recovery, time on oxygen/admission. It will also drive future research – as in larger multi-centre RCT.

Biography

Ralph Udeh is a COVID-19 researcher and a clinician with interest in the epidemiology of COVID-19, COVID-19 clinical trials, molecular virology, biostatistics, other infectious diseases and cancer. He is particularly interested in understanding the molecular underpinnings of COVID-19 and virology at large. His most recent work is focused on developing a clinical trial protocol for tasquinimod in COVID-19 [The TASQ-COVID trial]. With great enthusiasm, he looks forward to advancing his career in this field.

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Hearing screening in preschool and school children in Portugal - A 18-year experience of Coimbra health school, Portugal

M. Serrano

Instituto Politécnico de Coimbra, ESTESC-Coimbra Health School, Portugal

Introduction: Hearing impairment in children can compromise the development of language and communication skills, academic achievements, and the negative impact of even minor alterations is recognised. Since implementation of Universal Newborn Hearing Screening, preschool and school hearing screening programmes would identify later onset or progressive hearing losses, conductive hearing loss, tinnitus and vertigo. Early identification of hearing loss is very important to provide optimal hearing conditions of school children, minimising the effects on the social, emotional and cognitive development of the individual, which are very important by the time the child starts primary school. Hearing loss can have a great impact on reading, writing, central auditory processing, and balance.

Objective: Since 2002, the Coimbra Health School, Audiology BSC has developed hearing screening in the community. The objective of these screenings is to identify changes in hearing and / or in the middle ear in children between 5 and 17 years old, with a special emphasis on children aged 5-6 years.

Methods: Children with parental consent were evaluated by otoscopy, tympanometry and audiometry (1, 2 and 4 KHz presented at 40 and 20 dB intensity). A small questionnaire is done to children aged 10 years and over. The results were classified as pass or refer. Every non-normal result of any category would imply referral to the child's primary health care doctor or directly to ENT specialist.

Results: Over years it was found that the prevalence of audiological alterations decreases with the child's growth but at 5/6 years old it's about 30%. This percentage is often confirmed by the observation of an ENT specialist and by audiology hospital laboratories.

Conclusion: To implement and perform a preschool and school hearing screening is important and necessary but at 5-6 years (with a high predisposition to middle ear problems) hearing screening should be mandatory with the main objective of identifying and referring for treatment children who present alterations in order to reduce the consequences of the hearing impairment.

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Biography

Graduated in Audiometry in 1986, completed Masters in Audiology in 2002 and PhD in Cognitive Science in 2018. Worked for 14 years in clinical set and for the last 19 years has been teaching Audiology at the Coimbra Health School, Portugal. Over the years, we have developed several activities to promote audiological health in the community through awareness-raising activities and audiological screening of different populations, but with a special emphasis on screening children of pre-school age. We participate in the development of hearing assessment and auditory training apps, aimed at improving the hearing care of the population. As a teacher we are President of the Scientific Committee of the Audiology Course since June 2009; Member of the Coimbra Health School Technical and Scientific Council since November 2001; and we has taught various classes for the Audiology Graduate and Masters Course, specifically: Applied investigation in Audiology; Community Audiology; and Auditory Processing.

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Biomonitoring of Portuguese firefighters: Levels of exposure to polycyclic aromatic hydrocarbons and potential health risks

M. Oliveira¹, C. Delerue-Matos¹, A. Fernandes²,
M.C. Pereira³, J.P. Teixeira⁴ and S. Morais¹

¹REQUIMTE-LAQV-Instituto Superior de Engenharia, Instituto Politécnico do Porto, Portugal

²Instituto Politécnico de Bragança, Portugal

³LEPABE-Departamento de Engenharia Química, Faculdade de Engenharia, Universidade do Porto, Portugal

⁴EPIUnit - Instituto de Saúde Pública, Universidade do Porto, Portugal

Firefighters are at high risk to suffer potential health effects due to their chronic exposure to a countless number of air pollutants, including polycyclic aromatic hydrocarbons (PAHs) that are released during fire occurrences. Firefighters' exposure assessment is one of the most challenging due to the logistic reasons and thus human biomonitoring represents an accurate tool to estimate total exposure. This study assesses firefighters' total exposure to PAHs through the determination of six urinary biomarkers of exposure (OHPAHs: 1-hydroxynaphthalene, 1-hydroxyacenaphthene, 2-hydroxyfluorene, 1-hydroxyphenanthrene, 1-hydroxypyrene, and 3-hydroxybenzo(a)pyrene) and two genotoxic/oxidative-effect biomarkers (basal DNA and oxidative DNA damage). Urinary concentrations of total OHPAHs were significantly increased in subjects that were recently involved in firefighting activities, being 1-hydroxynaphthalene, 1-hydroxyacenaphthene, and 2-hydroxyfluorene the compounds with the highest increments. Concentrations of urinary

1-hydroxypyrene were below the benchmark level (0.5 $\mu\text{mol/mol}$ creatinine) proposed by American Conference of Governmental Industrial Hygienists; 3-hydroxybenzo(a)pyrene, metabolite of the carcinogenic benzo(a)pyrene, was not detected. Positive correlations were found between levels of total OHPAHs and the oxidative DNA damage of exposed firefighters; data for DNA damage was inconclusive. Evidence was raised regarding the simultaneous use of biomarkers of exposure and of effect for the surveillance of firefighters' health and to better estimate the potential short-term health risks. Surveillance (bio) monitoring programs are needed, principally in the most severely affected countries, to better characterize short- and long-term health risks.

Funding: This work was financially supported by the project PCIF/SSO/0090/2019 by the Fundação para a Ciência e a Tecnologia, Ministério da Ciência, Tecnologia e Ensino Superior (MCTES) through national funds. This work received support by UIDB/50006/2020, UIDP/50006/2020, through the project PCIF/SSO/0017/2018 by the Fundação para a

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Ciência e a Tecnologia, Ministério da Ciência, Tecnologia e Ensino Superior (MCTES) through national funds. M. Oliveira was supported by the scientific contract CEEC-Individual 2017 Program Contract CEECIND/03666/2017.

Biography

Marta Oliveira graduated in Chemistry (2007), completed the Master's in quality Control-Water/Foods (2009) and concluded her PhD on Sustainable Chemistry (2016) from the Faculty of Sciences, University of Porto and Faculty of Sciences and Technology, Nova University of Lisbon. Since 2016 she is an integrated researcher at REQUIMTE-Associated Laboratory for Green Chemistry at the School of Engineering of the Polytechnic of Porto (Portugal). Her main research interests are: i) climate change and forest fires emissions, ii) firefighters' occupational exposure, iii) human biomonitoring, iv) environmental and occupational exposure to airborne pollutants, and v) health risk assessment. She collaborates in some projects, being the principal researcher and a member of the research team in two ongoing projects dedicated to firefighters' occupational exposure. She co-authored about 30 indexed papers (h-index:15; Scopus ID57202841330), 13 book chapters, 3 indexed abstracts, 14 short papers in conference proceedings, 20 oral and more than 60 poster communications in international/national conferences.

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Awareness of isotretinoin use and Saudi FDA pregnancy prevention program in Riyadh, Saudi Arabia: A cross-sectional study among female patients

Alnada Ibrahim¹, AmalAlmotiryAlshatri², Salem Alsuwaidan³, Lulu Almutairi⁴, Nasser Aljasser², Mansour Adam Mahmoud⁵, AfnanAlaseeri⁶, AbrarAlmonysir⁶, BadraaAlotaibi⁶, BatoulAlrasheed⁶ and MaramAlfawaz⁶

¹Department of Pharmacy Practice, Princess Nourah bint Abdulrahman University, Saudi Arabia

²Drug Safety and Risk Management Department, Saudi Food and Drug Authority (SFDA), Saudi Arabia

³Kind Saud Medical City, Research and Innovation Center, Saudi Arabia

⁴Research Center & Consulting Studies, Saudi Food and Drug Authority (SFDA), Saudi Arabia

⁵Department of Clinical and Hospital Pharmacy, College of Pharmacy, Taibah University, Saudi Arabia

⁶College of Pharmacy, Princess Nourah bint Abdulrahman University, Saudi Arabia

Introduction: Oral isotretinoin is an effective agent for the treatment of severe cystic acne. Isotretinoin is a teratogen; there is an increased risk of congenital defects in infants exposed to the drug in the uterus. The Saudi Food and Drug Authority (SFDA) has implemented a pregnancy prevention program (PPP) to protect females from those teratogenic effects.

Objectives: To investigate the awareness of women, of reproductive age who were using Isotretinoin or used it previously, about isotretinoin use and the SFDA-approved PPP in Riyadh, Saudi Arabia.

Methods: This cross-sectional study was conducted during the period from June to October 2019. A questionnaire was developed based on the published literature and the PPP recommendations. The study was carried out online among female patients who were on Isotretinoin therapy or have used it previously in Riyadh city. The Statistical Package for Social Sciences (SPSS for Windows, version 24) was used to analyze the study data.

Results: During the study period, 483 patients participated in the study. Among them, 97.3% reported that they used the drug based on a doctor's prescription, 94.6% were aware of

Isotretinoin's teratogenic effect, and 30.6% confirmed their awareness of the PPP. Amongst the participants, 9.1% (n = 44) used Isotretinoin while being married or planning to get married within a one-month period after using it. Concerning the use of two contraceptive methods according to the PPP guidelines, of the participants, 43.2% reported that they have been informed by their healthcare providers to use two contraceptive methods before starting the medication. Also 43.2% reported that they have been informed to use two contraceptive methods while using the medication, and 50% reported that they have been informed to use two contraceptive methods for one month after stopping the medication. Regardless of the information they had, participants' actual practice, was as follow: 15.9% used two contraceptive methods before starting the medication, 15.9% used two contraceptive methods during the treatment, and 13.6% used two contraceptive methods for one month after stopping the medication.

Conclusions: Although this study revealed that the vast majority of participants were aware of isotretinoin's teratogenic effect, still a considerable number of them had no idea about the PPP. This issue needs to greatly be addressed to minimize the risk of teratogenicity.

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Photosynthetically controlled Spirulina, but not Solar Spirulina, inhibits TNF- α Secretion: Potential implications for COVID-19-related Cytokine Storm therapy

D. Avni¹, O Rozen¹, A Tzachor², S Khatib¹ and S Jensen³



¹MIGAL Galilee Research Institute, Israel

²Cambridge University, UK

³MATIS, Iceland

An array of infections, including the novel coronavirus (SARS-CoV-2), trigger macrophage activation syndrome (MAS) and subsequently *hypercytokinemia*, commonly referred to as a cytokine storm (CS). It is postulated that CS is mainly responsible for critical COVID-19 cases, including acute respiratory distress syndrome (ARDS). Recognizing the therapeutic potential of Spirulina blue-green algae (*Arthrospira platensis*), in this in vitro stimulation study, LPS-activated macrophages and monocytes were treated with aqueous

extracts of Spirulina, cultivated in either natural or controlled light conditions. We report that an extract of photosynthetically controlled Spirulina (LED Spirulina), at a concentration of 0.1 $\mu\text{g}/\text{mL}$, decreases macrophage and monocyte-induced TNF- α secretion levels by over 70% and 40%, respectively. We propose prompt in vivo studies in animal models and human subjects to determine the putative effectiveness of a natural, algae-based treatment for viral CS and ARDS, and explore the potential of a novel anti-TNF- α therapy.

Biography

Dr Dorit Avni heads the Sphingolipids and Bio-active Natural based Compounds as Immune Modulators Laboratory, at MIGAL Galilee Research Institute. She specializes in in-vitro, ex-vivo and pre-clinical models, and practices a transdisciplinary approach in her research, employing genomic, immunologic, and metabolomic techniques. Her laboratory applies bio-active metabolites as immune system regulators aiming to prevent (functional food/food supplement) as well as develops novel platforms to treat (pharma) unmet diseases, such as COVID-19, IBD, NAFLD, TNBC, and liver cancer. PhD (Tel-Aviv University, IL) focused on novel pathways for the regulation of cytokines release Post-doctoral fellowship (Massey cancer center-VCU, USA) focused on sphingolipids in inflammation and cancer

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Hanlon method for prioritization health problems modified for being used by Non-Governmental development organizations in a rural area in Benin

A. Lopez Alba¹, I. Rosell Aguilar² and A. Almaraz Gómez²

¹12 de Octubre University Hospital, Spain

²University of Valladolid, Spain

International Cooperation and Development has undergone notable changes in the last recent decades and Non-Governmental Development Organizations (NGDOs) have acquired a great importance. Benin is one of the countries of sub-Saharan Africa with the most dramatic development indicators. Many NGDOs are focusing on Nikki, one of the less developed communities in the north-east of the country.

There is evidence that quantitative prioritization methods are an optimal element to establish which health problems require the highest priority action and they also constitute an element of distributional equity. However, in countries such as Benin, their appliance is scarce, and no valid references of its use were identified in the bibliography.

In this study, we modify the Hanlon method for prioritization health problems adapting it to both, Nikki's social-sanitary characteristics and to their use by small NGDOs for the creation of health programs in the field of

International Cooperation and Development.

The Modified Hanlon Method concluded after analyzing the 13 most relevant problems in the health zone that "Malaria", "Pregnancy, childbirth and perinatal diseases" and "Malnutrition" were a top priority for the development of cooperation programs by small NGDOs. In addition, an effective action carried on that 3 main health problems would have a positive impact on other relevant health problems such as "Anemias". Furthermore, the 3 highest priority health problems represented directly and indirectly two thirds of the total priority based on its impact, frequency, severity and resolution capacity.

This work concludes that the use of quantitative prioritization methods once adapted to the tactical and operational planning and to the targeted area are effective in order to determine the prior health problems in the scope of International Cooperation carried out by NGDOs.

Biography

Medical degree (University of Valladolid). Red cross (Valladolid association). Valladolid International Federation of Medical Students Association (Human Rights). Master in Clinic Medicine (Camilo José Cela University). Internal Medicine Residency (12 de Octubre University Hospital).

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Gender differences in the association between serum uric acid, body mass index, blood pressure and kidney functions in a population with prehypertension history: A cross-sectional study

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Background: Serum uric acid (SUA) levels is related with body mass index (BMI). The increased of SUA levels has been shown to be associated with obesity and hypertension. This study aims to observe the differences of the association between SUA levels, BMI, blood pressure (BP), and kidney functions in men and women.

Methods: This study used "Mlati Study" database in 2007 to select a total of 417 patients with a history of prehypertension by simple random sampling using statistical software. Patients were interviewed and underwent both physical and laboratory examinations for data collection (including body weight, body height, BP, blood samples, and urine samples) in two days. High SUA levels were defined as ≥ 7 mg/dL and normal SUA levels as < 5 mg/dL. Additional analysis's were performed using high SUA cut-off point of ≥ 6 mg/dL for women (n=450).

Results: SUA levels were significantly associated with gender, where men tended to have high

SUA levels compared to women ($p < 0.001$, $RR = 12.39$, $95\%CI = 6.21-24.74$). Patients with overweight and obesity were significantly associated with high SUA levels, both in men and women ($p < 0.001$, $RR = 2.33$, $95\%CI = 1.34-4.05$ and $p = 0.016$, $RR = 1.05$, $95\%CI = 1.00-1.09$, respectively). Regarding kidney functions, neither uric acid excretion nor uric acid concentration had significant association with SUA levels, both in men and women. Moreover, high SUA levels were proven to be significantly related to prehypertension or hypertension, but only in women ($p < 0.05$). Additionally, analysis for different cut-off point of high SUA levels for women also showed the same results for BMI, BP and kidney functions.

Conclusion: We concluded that SUA levels in men tended to be higher than in women. Overweight and obesity were associated with high SUA level, either in men and women. Furthermore, high SUA levels were related to prehypertension and hypertension, but only in women.

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Biography

Mochammad Sja'ban graduated as a Medical Doctor at the Faculty of Medicine Public Health and Nursing, Universitas Gadjah Mada (UGM), Indonesia. He became an Internist Specialist and Nephrologist in the same University. He obtained his Medical Science degree in Clinical Epidemiology and Biostatistics at the University of Newcastle, Australia. He received his doctor of Philosophy degree and Professor in UGM. He became the Head of Internal Medicine Department and Vice Head of Ethical Committee, UGM. He was also accepted as a visiting-professor to Internal Medicine, Juntendo University, Japan. He is currently as a Professor of the Doctoral Program in the Faculty of Medicine Public Health and Nursing in UGM and Faculty of Medicine and Health Sciences in Universitas Muhammadiyah Yogyakarta, Indonesia.

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**Therapeutic effect
observation of
Tiotropium Bromide
in the treatment of
Overlap Syndrome**

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Ting Wang²**



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²The First Affiliated Hospital of Kunming Medical University, China

Introduction: "Overlap syndrome (OS)" refers to patients with chronic obstructive pulmonary disease (referred to as COPD) with obstructive sleep apnea hypopnea syndrome (OSAHS). Patients with OSAHS have recurrent apnea and hypopnea during sleep, leading to hypoxemia. Patients with COPD have persistent airflow limitation and hypoxemia for a long time, which causes more severe hypoxia in OS patients. The coexistence of the two aggravates the patient's condition, and is more likely to cause increased risk of hospitalization and mortality due to risk factors such as respiratory failure, heart failure, and arrhythmia.

Objective: To study the M receptor blocker on inhalation in patients with overlap syndrome (chronic obstructive pulmonary disease and Obstructive sleep apnea syndrome) curative effect analysis.

Methods: 25 patients with overlap syndrome as the experimental group, chronic obstructive pulmonary disease patients (30) as control group, patients with overlap syndrome use inhaled tiotropium powder treat 30 days, to observe the changes of pulmonary function, polysomnography, and other indicators after treatment.

Results: Overlap syndrome were treated by tiotropium bromide inhalation powder, has improved the pulmonary function, the sleep apnea index and lowest nocturnal oxygen saturation after treatment.

Conclusion: Tiotropium bromide has a preferable effective in treatment of overlap syndrome, COPD and OSAHS are interacting with each other.



Physical symptoms and mental health status in deep underground miners: A cross-sectional study

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Objectives: To reveal the physical symptom changes and their correlations with mental health status in deep underground miners.

Methods: A total of 286 deep underground miners completed a cross-sectional questionnaire study at China Pingmei Shenma mine complex. The questionnaire included sociodemographics, self-reported physical symptoms, underground adverse environmental factors and the Symptom Checklist-90-Revised (SCL-90-R). Five environmental parameters of one deep mine were also measured.

Results: Data from 266 valid questionnaires were analyzed. The three most frequent complaints about underground adverse conditions were moisture [62.03% (165/266)], dim light [45.86% (122/266)] and high temperature [42.11% (112/266)]. Fatigue [40.22% (107/266)], hearing loss [34.96% (93/266)] and tinnitus [31.58% (84/266)] were reported to be the three most common physical

symptoms. Insomnia was reported in 204 participants (76.69%) mainly due to the difficulty of falling asleep [42.35% (84/204)] and dreams [39.70% (81/204)]. Mean scores of SCL-90-R subscales including somatization, anxiety, phobic anxiety, psychoticism and paranoid ideation were elevated compared to Chinese norms, while there was diminished interpersonal sensitivity. Univariate analyses indicated that the three most common physical symptoms were associated with poorer SCL-90-R scores. With increasing depth below ground, air pressure, relative humidity, CO₂ concentration and temperature rose, while total γ radiation dose-rate decreased.

Conclusions: The physical and mental health status of deep underground miners was poorer than the general Chinese male population. Some adverse environmental factors were identified that may have influenced health status. Measures are suggested to improve the deep underground working environment.

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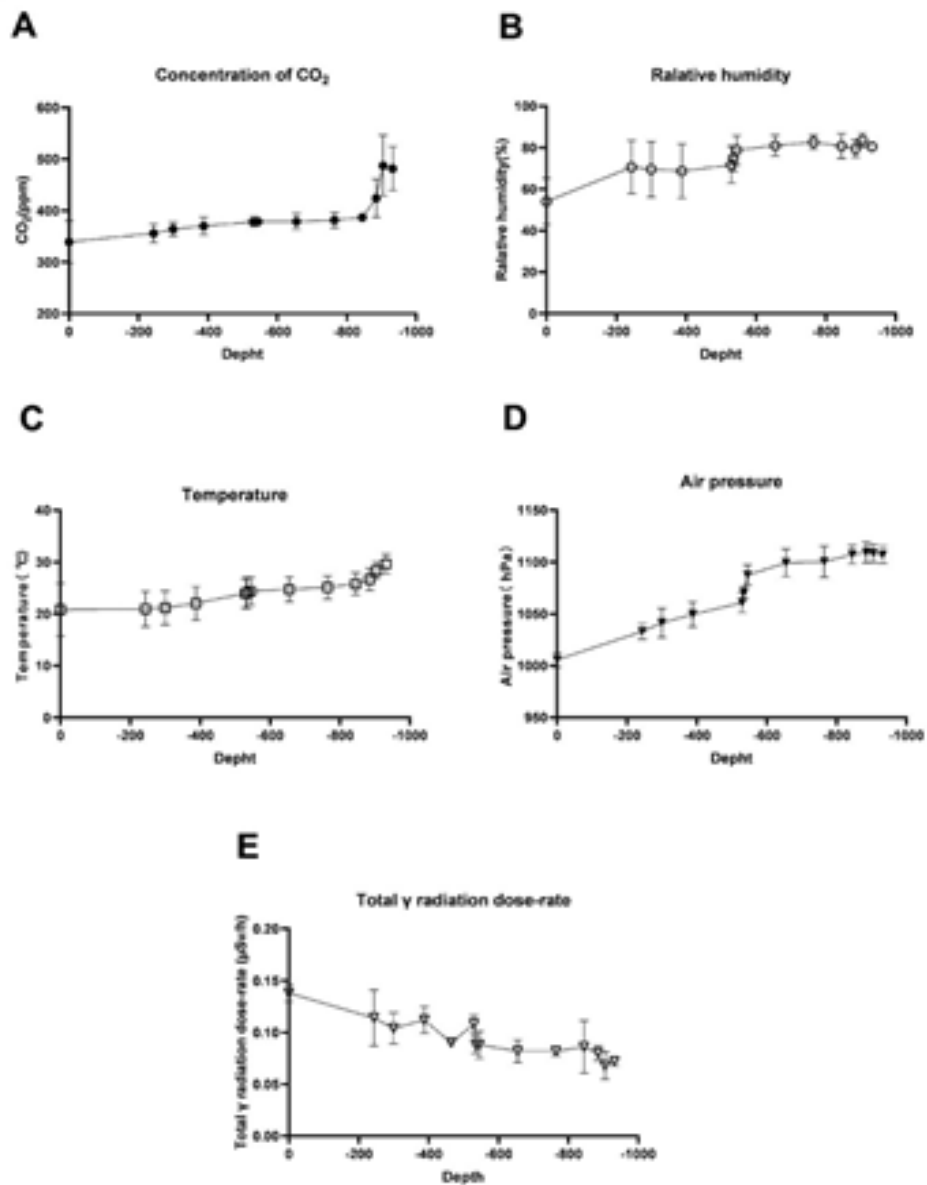
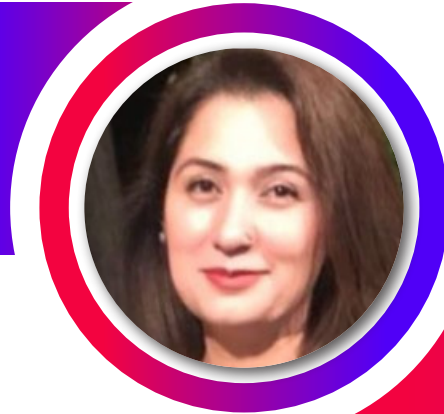


Figure 1. The relationship between environmental parameters (concentration of CO₂, relative humidity, air pressure, temperature and total dose rate of γ radiation) and the depth underground in twelfth mine of China Pingmei Shenma Group. A. The Concentration of CO₂ increased with the increasing depth below ground; B. Relative humidity increased with the increasing depth below ground; C. Temperature increased with the increasing depth below ground; D. Air pressure increased with the increasing depth below ground; F. Total γ radiation dose-rate decreased with increasing depth below ground.



Fright management among rehab professionals amid COVID 19

Nazia Mumtaz

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Presently the acceptable manner to protect oneself against the onslaught of genetically varying forms is through practicing social distancing and when coupled with the prospects of heading towards social isolation with its accompanying economic losses. Stress and anxiety is the initial reaction upon being diagnosed as positive for SARS-2 CoV RNA on PCR causing alarm in rehabilitation professionals encountering direct exposure and being vulnerable as rehabilitation of patients is necessarily carried out. Despite the electronic media blitz scientific data remains insufficient to establish definite medical and health protocols being a recent and ongoing pandemic. The current study is an attempt to review and isolate the triggers causing fright among rehabilitation professionals thereby identifying credible management solutions arising in the backdrop of Pakistan's current pandemic of COVID-19. In this regard literature was searched from

major electronic databases including PubMed, Google, Google Scholar and Web-of-science, with keywords "Covid-19, mental health, telehealth, telemedicine, tele-rehabilitation and combination of words". Eighty English, full text articles were analyzed out of which 36 were used for the literature review which leads to the conclusion that COVID-19 embodies fear of contracting and transmitting this disease among health professionals. This fear can be mitigated and managed by relying more on availability of tele-rehabilitation and telehealth facilities. Treatment of patients emerging from prolonged mechanical ventilations demands extensive rehabilitation to restore routine body functions. The direct and structured approach of otolaryngologists and speech language pathologists (SLP) enables appropriate and timely long term intervention and rehabilitation empowering and facilitating patients to resume mainstream activities.

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Evaluation of Picture Archiving and Communication System (PACS): Viewpoints of radiologists in some teaching hospitals

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Background: Picture Archiving and Communication System (PACS) is one of the common systems used in hospitals, which is of special importance due to its diagnostic nature. Evaluating this system from the perspective of radiologists as one of its main users can have many benefits for designing future system. In this study, the evaluation of the system was performed based on the viewpoints of radiologists.

Method: This cross-sectional study was conducted using the census method of radiologists in Al-Zahra and Kashani hospitals in Isfahan. The data collection method was a standard questionnaire including 40 items with 3 options Likert scale. The analysis of the findings was performed using SPSS 21 software. Findings were presented as frequency

distribution tables and the research hypothesis was tested using independent sample t-test.

Results: The mean age of physicians participating in the study was 34.94 ± 6.57 years. Statistical test showed that there was a significant difference between PACS A and B in terms of potential benefits and challenges of PACS, but no significant difference was observed between the two systems in terms of systems comparison with traditional film-based system.

Conclusion: Most users of both systems believe that PACS include many advantages over the traditional system and can have positive potential effects on patients care. However, issues such as slow speeds of system, system lags and disconnection, and inadequate workstations remain concerns.

Biography

I am a graduate in medical records at Isfahan University of Medical Sciences and now I am a PhD candidate in health information management at Kashan University of Medical Sciences. I have already published two articles on PACS evaluation in reputable journals.



Efficiency in reducing COVID-19 death rate: An application of technical inefficiency effects model across Indian states

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Background: Evidence from earlier studies on COVID-19 suggests that the countries led by female leaders were more successful in handling the COVID-19. Indian being patrilocal society evidence that woman's political autonomy in autonomy in the Gram Panchayat do miracle concerning development. With this backdrop, the present paper aimed to explore the role of women's political participation and leadership on the efficiency in combatting COVID-19 for Indian states.

Methods: This predominantly empirical paper was entirely based on secondary data compiled from different sources. The empirical analysis of the paper was facilitated by the utilization of the Technical Inefficiency Effects model within the framework of Stochastic Production Frontier. The reciprocal of the death rate of COVID-19 was

considered as the output variable. The health personnel and health infrastructures indicators were considered as inputs. Conversely, non-health determinants, including, women's political leadership indicators were recognized as inefficiency effects variables.

Results: The empirical result evidenced that West Bengal, a female-headed state became the second most efficient in the list followed by Karnataka. The empirical results accredited us to conclude that the efficiency of the Indian states to combat COVID-19 was highly influenced by female political participation and leadership, digitalization, urbanization, and literacy rate.

Conclusion: The study expostulated for the women's political autonomy. The study also advocated for the improvement of health and non-health infrastructure for long-term benefit.

Biography

Shrabanti Maity did M. Sc in economics with specialization on Statistics and Econometrics from the University of Calcutta and then she gained her PhD degree from The University of Burdwan. She completed her post-doctoral research from Ghent University, Belgium. Currently, she is working as an Associate Professor of Economics at Vidyasagar University, Midnapore. Earlier she was appointed as Assistant Professor of Economics in Assam University (A Central University), Silchar. During this academic journey, she has published more than fifty articles in different reputed national and international journals and edited books. She has supervised five PhD and three M.Phil dissertations. Presently four candidates are pursuing PhD under her supervision. A book entitled, A Study of Measurement of Efficiency, written by her is published by Verlag Dr. Muller (VDM). Her areas of research interest are- Applied Econometrics, Human Development, Gender Studies, and Socio-economic Facets.

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Prevalent health problems among Nepalese under-ground construction workers

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³Environment and Public Relation Section, Nepal

Background: Workplace is associated with exposure to various products, which can be associated with adverse health outcomes. It is true with underground construction work. This study calculated the prevalence of common health problems among Nepalese underground construction workers in comparison to heavy construction workers. This type of study is rare in the context of Nepal and other developing countries and we hope that the findings will help to take precautions for the prevention of these conditions.

Method: It was a retrospective study based on the clinical record of outpatient cases and general health check-ups of all Nepalese workers available at the Project clinic, Upper Tamakoshi Hydroelectric Project, Gongar, Bigu, Dolakha. We studied three hundred ninety-eight workers. We used multipurpose analysis and calculated Chi-square test, correlations, odds ratios.

Results: 216 (54.3%) participants worked inside the tunnel and 182 (43.2%) participants worked outside the tunnel. Respiratory disease

mainly upper respiratory tract infection (URTI) (23.4%) is the most common presentation among construction workers followed by injuries (16.7%). Injuries and hypertension were significantly higher in inside the tunnel workers and acute gastroenteritis was significantly (p -value <0.05) higher in outside the tunnel workers. Other common diseases were acid peptic disease, cutaneous fungal infection, dermatitis, and foreign body eye/ear. Increasing age increased the chance of hypertension and cutaneous fungal infection among construction workers. Further studies are required for the analysis of risk factors associated with these health conditions.

Conclusion: Respiratory problems are the most common health problem in underground construction workers however; injuries and hypertension were significantly higher in tunnel workers. Acute gastroenteritis was significantly higher among outside the tunnel workers. Workplace safety should be the priority of every construction sites especially focusing to prevent respiratory problems, injuries, and accidents.

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Table 1: Chi-square test, correlation, and odds ratio analysis (multipurpose analysis) of health problems among the inside tunnel workers and outside tunnel workers.

S.N	Disease	Frequency /percentage within group		Chi-square		Correlation		Odds Ratio		95% C.I.	
		Inside tunnel	Outside Tunnel	Value	p-value	Value	p-value	Value	p-value	Lower	Upper
1	URTI	65/30.1	47/25.8	0.89	0.35	0.047	0.347	1.236	0.346	0.795	1.922
2	Injuries	52/24.1	42/15.4	4.644	0.031	0.108	0.031	1	0.032	1.048	2.902
3	APD	14/46.5	16/8.8	0.756	0.385	-0.044	0.386	0.719	0.386	0.341	1.516
4	Hypertension	30/13.9	9/4.9	8.939	0.003	0.15	0.003	3.1	0.004	1.431	6.717
5	Cutaneous fungal infection	12/5.6	17/9.3	2.095	0.148	-0.073	0.149	0.571	0.152	0.265	1.229
6	Malabsorption	12/5.6	9/4.9	0.074	0.786	0.014	0.787	1.131	0.786	0.465	2.747
7	Acute gastro-enteritis	8/3.7	18/9.9	6.191	0.013	-0.125	0.013	0.350	0.017	0.149	0.826
8	Foreign body eye /ear	11/5.1	15/8.2	1.604	0.205	-0.063	0.206	0.597	0.209	0.267	1.335
9	Dermatitis	9/4.2	12/6.6	1.164	0.281	-0.054	0.282	0.616	0.285	0.254	1.497
10	Refractive Error of eye	24/11.1	10/5.5	3.988	0.046	0.1	0.046	2.15	0.05	1.00	4.624
11	Other	13/6.0	15/8.2	0.746	0.388	-0.043	0.389	0.713	0.389	0.33	1.540

Biography

Education:

April 2015-April 2018: MD in General Practice and Emergency Medicine from Maharajgunj Medical Campus, Institute of Medicine, Tribhuvan University, Nepal

Nov 2006-May 2013: MBBS from Maharajgunj Medical Campus, Institute of Medicine, T.U including one year internship at Tribhuvan University Teaching Hospital, Maharajgunj, Kathmandu, Nepal

Jul 2003 -May 2006: +2 science from Caspian Valley College Higher Secondary School, Kumaripati, Lalitpur, Nepal

Dec 1991-Apr 2003: School level education up to SLC from Kanchan Secondary English School, Chapagaon, Lalitpur, Nepal

Present involvement:

Clinical Coordinator, District Hospital, Terhathum, Province 1, Nepal

Co-editor, Journal of General Practice and Emergency Medicine of Nepal

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Prevalence and predictors of contraceptives use among women aged (15–49 years) with induced abortion history in Ghana

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¹Ministry of Health, Ghana

²Department of Geography, Western University, Canada

Background: The incidence of abortion in Ghana ranges from 27 per 1000 to 61 per 1000 women, causing gynaecological complications and maternal mortality. The use of modern contraceptives and its associated factors among women aged 15–49 years have been documented. However, utilization of modern contraceptives specifically among women with induced abortion history is underreported. The study therefore aimed at determining the proportion and identifying predictors of contraceptives use in this underreported population.

Methods: The study used secondary data from the 2017 Ghana Maternal Health Survey (GMHS) for the analysis. The analysis is on a weighted sample of 3,039 women aged (15–49 years) with a history of induced abortion. Both descriptive and inferential methods were employed. Chi-square test, univariate and multivariate logistic regression

techniques were used to assess statistical associations between the outcome variable and the predictors. Statistical significance was set at 95% confidence interval and p values ≤ 0.05 .

Results: Out of the 3,039 participants, 37% (95% CI: 34.6, 38.84) used contraceptives. We identified women' age, union, place of residence, knowledge of fertile period, total pregnancy outcomes, and region as strong significant (95% CI, $p \leq 0.05$) predictors of post induced abortion contraceptives use.

Conclusion: Contraceptives use among this vulnerable population is low. Therefore, there is a need to provide widespread access to post abortion contraception services and enhance efforts to efficiently integrate safe abortion practices law into health services in Ghana.

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"From experts to locals hands" healthcare service planning in sub-Saharan Africa: An insight from the integrated community case management of Ghana

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⁵Faculty of Spatial Planning, TU-Dortmund, Germany

⁶Department of Urban and Regional Planning, Ardhi University, Tanzania

Background: Although community participation remains an essential component globally in healthcare service planning, evidence of how rural communities participate in the planning of rural-based healthcare programs has less been explored in Sub-Saharan Africa.

Objective: We explored communities' participation in health care planning in hard-to-reach communities, within the context of Integrated Community Case Management (iCCM), a community-based health program implemented in Ghana.

Methods: Qualitative data were collected from eleven (11) hard-to-reach communities through Focus Group Discussions (FGDs), Key Informant Interviews (KIIs) as well as district-level studies (Nadowli-Kaleo, and WA East districts of Ghana). The Rifkin's spider-gram, framework, for measuring and evaluating community participation in healthcare planning was adapted for the study.

The results: The study found that community


participation was superficially conducted by the CHOs. A holistic community needs assessment to create awareness, foster a common understanding of health situations, collaboration, acceptance and ownership of the program were indiscernible. Rather, it took the form of an event, expert-led-definition, devoid of coherence to build locals understanding to gain their support as beneficiaries of the program. Consequently, some of the key requirements of the program, such as resource mobilization by rural residents, Community-based monitoring of the program and the act of leadership towards sustainability of the program were not explicitly found in the beneficiaries' communities.

Conclusion and recommendation: The study concludes that there is a need to expand the concept of community involvement in iCCM to facilitate communities' contribution to their healthcare. Also, a transdisciplinary approach is required for engineering and scaling up community-based health programs, empowering VHCs, CBHVs and CHAs to realize success.

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Mapping of WHO recommended insecticide resistance in the West Nile Encephalitis, Japanese Encephalitis, Lymphatic Elephantiasis vectors, *Culex pipiens* complex in the world

**Hassan Vatandoost^{1,2}, Amrollah Azarm¹,
Awat Dehghan¹, Fateme Nikpoor²,
Ghazal Tashakori¹ and Ahmadali Hanafi Bajd¹**

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²Department of Environmental Chemical Pollutants and Pesticides, Institute for Environmental Research, Tehran University of Medical Sciences, Iran

Background: Vector-borne diseases transmitted by insect vectors such as mosquitoes occur in over 100 countries and affect almost half of the world's population. *Culex pipiens* complex is the vector of West Nile Encephalitis, Japanese encephalitis, Saint Louis encephalitis, avian malaria and lymphatic Elephantiasis vectors. Vector control using insecticides is recommended, but the emergence of insecticide resistance is a threat for control and prevention of vector-borne diseases. Understanding of insecticide resistance helps to formulate a global strategy to control insecticide resistance in vectors.

Materials and Methods: Worldwide insecticide resistance in these species was found by the available papers and map of

the data for carbamates, organochlorines, organophosphates, pyrethroids, microbial and insect growth regulator insecticides were done. An intensive search of scientific literature was done in "PubMed", "Web of Knowledge", "Scopus", "Google Scholar", "SID", etc.

Results: Results showed a wide variety of susceptibility/resistance status of *Culex pipiens* complex to these insecticides in the world.

Discussion: Due to the importance of this species in the transmission of diseases, resistance management strategies should be further considered in to prevent from insecticide resistance and replacement of novel approach for vector control.

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Elephant in the room; Comparing total cholesterol, HDL-C and their ratio among ischemic and hemorrhagic stroke

Muhammad Ahmad Alamgir

Bahawal Victoria Hospital / QAMC Bahawalpur, Pakistan

Scope and background: Every year more than 7,95,000 people in USA are victims of cerebrovascular accident, majority being ischemic. There is hypothesis that lipid abnormalities have modifiable risk relationship with stroke subtypes.

Elephant in the room; Comparing total cholesterol, HDL-C and their ratio among ischemic and hemorrhagic stroke.

Study Design: An observational prospective comparative study.

Methodology: Hundred patients between 30 to 90 years of age, admitted in BVH Bahawalpur with first ever CVA and verified by CT scan brain, were included in the study. Patients with history of coronary heart disease or lipid lowering drugs, epilepsy, infective or metastatic disorder, or pre-existing cognitive defects, were excluded from this study. A medical history with neurological examination was recorded and subjects were broadly divided in 50 each participant of ischemic (group A) and hemorrhagic (group B) subtypes. Fasting total cholesterol (TC), high density lipoproteins (HDL-C) and triglycerides

(TGs) of both groups were collected and mean values of quantitative data were presented as mean SD [standard deviation]. The lipid values were interpreted in normal or high-risk category by applying NCEP ATPIII criterion. Frequency percentage of values was determined and compared using proportion test taking p-value of < 0.05 as significant.

Results: Quantitative lipoprotein data showed that in group A (ischemic CVA), mean TC was $218.30 \pm 79\text{mg/dl}$ and raised above normal reference range. While it was $194 \pm 26.7\text{mg/dl}$ in hemorrhagic cases (highly significant at P value of < 0.001). The mean HDL concentration was $33.10 \pm 7.33\text{mg/dl}$ in patients of ischemic stroke while it was 40.02 ± 4.22 in hemorrhagic cases (p value 0.002, highly significant). Serum TGs levels turned out to be normal in both groups.

Conclusion: Hypercholesterolemia and low HDLC was seen significantly in ischemic CVA group as compared to hemorrhagic counterpart so needing timely preventive lipid lowering strategies.

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Biography

Kindness is always free, so working in health care system is most noble job in society. My name is drmuhammad Alamgir and I am currently posted as assistant professor of medicine in corona dedicated hospital in Bahawalpur, Pakistan, I graduated from Quaid-e-Azam medical college in 1989 and worked as resident, senior registrar and consultant in Bahawal Victoria Hospital, Pakistan. I earned credentials of MCPS and FCPS in 2005 while currently studying health profession education program. I have long integrating experience in patients care, consultation and teaching medicine to undergraduates. Teachers have main role in character building, behavior development and ethics. My passion is strategic research work and about 10 papers are published in reputable journals; In spare time I may prefer studies and giving time to family. My core professional belief or value is serving ailing humanity because "serving others is rent you pay for your room in heaven".

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Covid-19 pandemic in Nigeria: Palliative measures and the politics of vulnerability

Isaac Omo-Ehiabhi Eranga

Center for Cancers Awareness Campaign, Nigeria

In a bid to slow the rate of spread of the virus, the Federal Government of Nigeria, on several occasions, imposed targeted lockdown measures in areas with rapid increase of Covid-19 cases. The states in which the federal government imposed the targeted lockdown included Lagos, Ogun, and the Federal Capital Territory in Abuja. Some States in the country imposed partial lockdown and closure of interstate

boarders. Curfews have also been introduced in all the states nationwide. To alleviate the effects of the lockdown, the Federal Government of Nigeria rolled out palliative measures for targeted groups. However, lamentations have trailed the distribution of government palliatives by the masses. Citizens allege that the process of distribution of palliatives had been politicized.

Biography

Isaac Omo-Ehiabhi Eranga is an alumnus of Center for Bioethics and Research. He bagged degrees in Philosophy and Theology and he's the founder of Center for Cancers Awareness Campaign Nigeria.

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Narcissism and impeded individuation

Karolina Nørby

Jungiansk Psykoterapi & Analyse, Denmark

This presentation examines the question of why the pattern of narcissistic object-relating (collusion) develops early in life and how it may impact the lifelong process of individuation. The scope of the presentation is limited to the study of the narcissistic relational pattern, being a neurotic self-defense organization of the psyche, and its potential influence on the process of individuation. Narcissistic adult couple relationships are one of the arenas in which unresolved aspects of the past, alive in the present, are unconsciously brought and endlessly repeated with intensity. Adult relationships are often formed in the hope that both partners will wipe out their old wounds. However, despite apparent

differences in overt social functioning, people unconsciously tend to select partners who are at the same basic level of personality differentiation, but who have opposite patterns of defensive organization. Primitive defences and projections, which are played out by the narcissistic couple, become a substitute for true identity. These dynamics inhibit the ability of the ego to gain access to the unconscious, and the Self to get access to the ego, disrupting the possibility of emergence of a dialogical relationship. This process creates obstacles to growth and individuation, which leads this author to suggest the notion of 'impeded individuation' in narcissism.

Biography

Karolina Nørby, M.Sc., M.A., (Denmark) is a Jungian Analyst who devotes her time between maintaining a busy analytical practice in Copenhagen and lecturing on the subjects of Jungian psychology and psychotherapy. Karolina's main area of professional interest is the interface between western Jungian analytical psychology and the eastern practices of meditation and mindful presence. In her opinion, an integrative approach to mental healthcare, based on a combination of these two approaches, can address the profound need for a more in-depth and person-centred approach to modern mental healthcare.

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Low adoption of EHR patient portal in U.S.A adult population: What has social media and digital divide got to do with it?

Ahmed Otokiti¹, Karmen S. Williams² and Leyla Warsame³

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²Senyaun Consulting, USA

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Objective: Our study aimed to determine the effect of a digital divide in the adoption of online patient portals by the motivated patients who wish to improve their health outcomes by use of internet and information technology, to assess determinants of low adoption rates of online portals, and to explore social media use as a correlation to patient portal use.

Methods: We utilized data from the Health Information National Trends Survey (HINTS, 2017 and 2018). We performed a cross-sectional study analyzing the outcome variable of patient portal use with several predictor variables: age, marital status, gender, mental health, education, Medicaid, income, number of people in household, trust, social media, chronic disease, and health app use. Basic descriptive statistics and logistic regression were performed using SPSS version 25.

Biography

Ahmed is an advocate of 360 degrees digital health evaluation. A holistic methodology of digital health outcome evaluation emphasizing its impact on public health improvement and health disparity. He is presently a clinical informaticist/clinical instructor at the Icahn School of Medicine at Mount Sinai Hospital in New York. He champions various electronic health record optimization projects for efficiency and clinical workflow improvement.

Results: Our study found that low adoption rates go beyond the digital divide. Previously identified digital divide factors like health insurance type, age, and chronic disease, which are determinants of patient portal use in the general population, were not significant predictors in our motivated sampled population. The study also found that a correlation exists between social media use and patient portal use.

Conclusions: Many of the factors previously identified by the literature may not be a barrier to patient portal use by self-motivated individuals, which underscores the importance of self-motivation inpatient portal use. Behavioral/motivational interventions and improvement in its usability geared towards adopting online portals can improve its public health significance.

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Framework for colorectal cancer health needs assessment in post-soviet countries

R. Pratiti

McLaren HealthCare, USA

Background: Colorectal cancer (CRC) is the third leading cause for cancer worldwide. Prevalence of CRC is increasing in post-Soviet countries (PSC). European guidelines encourage member countries to allocate resources for primary prevention of CRC through screening. Though, cost-effective screening is becoming a priority.

Methods: A framework for health priority determination to prioritize CRC screening was developed. Public health websites were accessed to abstract epidemiologic data for PSCs. The framework included prioritization by absolute risk (incidence, prevalence), relative risk (CRC ranking for national cancer deaths) and population attributable risk for the disease. Risk indicators were identified for PSC. Further detailed risk assessment by Z scoring was completed to assess CRC disease burden. Statistical analysis was performed for correlation. Variables included in risk assessment were population, life expectancy, gross national income per capita, percent GDP spent on health expenditure, total expenditure

on health per capita, age standardized mortality to incidence ratio, cancer ranking by incidence and smoking prevalence.

Results: Ideal risk assessment can assess the disparities related to CRC burden. The risk assessment showed difference in CRC burden amongst the PSC. Armenia, Belarus, Georgia and Kyrgyzstan have high burden with risk scores ranging from 2-5. Though Latvia and Lithuania have some CRC burden, the risk score is mitigated by expenditure on health and improved mortality to incidence ratio because of CRC screening. On the other hand, Tajikistan with some risk factors had most of its score decreased by the CRC mortality ranking of 22nd indicating a very low CRC burden.

Conclusion: Risk assessment score could be an arbitrary measure to evaluate inter regional variability in CRC burden. Identifying high CRC burden countries to prioritize screening is important. Uniform and comparable CRC risk indicators for the region is needed. Health need assessment and priority setting is important for better distribution of resources.

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Table: Risk assessment Z score

Country	Z score Population	Z score Life Expectancy	Z score Gross national income per capita (international dollars)	Z score % GDP spent on health expenditure	Z score Total expenditure on health per capita (international dollars)	Z score Age standardized mortality to incidence ratio	Z score Cancer ranking by incidence	Z score Smoking prevalence	Total Score
Uzbekistan	0	0	1	0	1	0	0	-1	1
Azerbaijan	0	0	0	0	0	1	0	0	1
Georgia	0	0	1	-1	0	1	0	1	2
Armenia	0	1	1	1	1	0	0	1	5
Ukraine	1	-1	1	-1	0	0	1	0	1
Turkmenistan	0	0	0	2	1	0	-2	-2	-1
Belarus	0	1	0	0	0	-1	1	1	2
Kazakhstan	0	-1	-1	1	0	1	0	0	0
Latvia	0	1	-1	0	0	-2	1	0	-1
Russia	3	-1	-1	-1	-2	0	1	1	0
Estonia	-1	2	-1	0	-1	1	1	0	1
Lithuania	0	1	-1	0	-2	1	1	1	1

Biography

Rebecca Pratiti works as a faculty physician with McLaren Health Care, Flint. She had recently completed her Master's in Public Health. She is interested in epidemiology and occupational health. Her most recent projects have been about the harms of hookah smoking, biomass cookstove related indoor air pollution health effects, colorectal cancer effect on public health and developing epidemic outbreak questionnaire.

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Paradigms lost? COVID-19 and the challenges of health care provision

Susan B. Rifkin

Department of Health Systems, Colorado School of Public Health, USA

Thomas Kuhn in his book, *The Structure of Scientific Revolutions*, defines paradigm “as a philosophical and theoretical framework of a scientific school or discipline within which theories, laws and generalizations and experiments performed in support of them is formulated”. The health paradigm for the last two and half centuries has been a bio-medical paradigm that pursues the search for good health as mainly the absence of disease. The criteria for interventions are that they are reliable, replicable and valid. Thus, health improvements are based on interventions that are linear, predictable and generalizable. Challenges to this view were catalyzed in 1978 at Alma Ata by member states of the World Health Organization adopting Primary Health Care (PHC). PHC was based on the principles

of equity and community participation, approaches that revolutionized the ideas of how health improves. This approach has rapidly gained traction during the COVID-19 pandemic where the bio-medical paradigm has failed to halt the still spreading virus. More information and publications are giving evidence that a new approach is needed focusing on equity, community participation, governance, and social justice. Is a new paradigm for health improvements able to replace the old one? This presentation reviews the main attributes and values of both paradigms and examines whether a paradigm based on social determinants and rights base approaches can and will replace the bio-medical paradigm. It will highlight the strengths and weaknesses of a new paradigm and the challenges for change.

Biography

Susan Rifkin is an Adjunct Professor at the Colorado School of Public Health, a Senior Associate at the Bloomberg School of Public Health, Johns Hopkins University and on the faculty of the London School of Hygiene and Tropical Medicine. She has helped to establish two Masters degree Programs in Public Health --one at the University of Heidelberg and one in Kisumu Kenya. She has done consultancy work for WHO, UNICEF, World Bank and the European Union. Her research interests are focused on health policy, Primary Health Care, community participation and empowerment, in low and middle- income countries. She has published widely in *The Lancet*, *Health Policy and Planning*, *BMJ Global Health*, and *Social Science and Medicine*.

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Demographic profile and service-connection trends of posttraumatic stress disorder and traumatic brain injury in US veterans pre- and post-9/11

COL (Ret.) Hemant Thakur and Ram Sharma
V.A. Medical Center, USA

Introduction: Changes in the nature of warfare has altered the health consequences among veterans. We planned to understand the demographic changes in the active-duty service member profile prior to and following September 11, 2001 (9/11). We analyzed the diagnosis of posttraumatic stress disorder (PTSD) and traumatic brain injury (TBI) as recorded in service-connection ratings (percent disability).

Methods: A retrospective cohort-study of military veterans who received care at Veterans Health Administration medical centers between December 1998 and May 2014 using clinical data from the Corporate Data Warehouse.

Results: A cohort of 1,339,937 veterans who received an inpatient/outpatient diagnosis of PTSD and/or TBI was divided into 4 service period groups and 3 diagnosis categories. The service periods included pre-9/11 (n = 1,030,806; 77%), post-9/11 (n = 204,083; 15%), overlap-9/11 (n = 89,953; 7%), and re-entered post-9/11 (n = 15,095; 1%). The diagnosis categories included PTSD alone (n = 1,132,356; 85%), TBI alone (n = 100,789; 7%) and PTSD+TBI (n = 106,792; 8%).

Results of the post-9/11 group revealed significant changes, including (1) increase of veterans with PTSD+TBI; (2) increase of female veterans with PTSD+TBI; and (3) increased level of severity of diagnosed PTSD/TBI evidenced by higher service-connected disability pensions at younger age in the post-9/11 group and; (4) unequal distribution of veterans with PTSD+TBI across geographic areas.

Conclusions: The veteran of the post-9/11 period does not mirror the pre-9/11 period. Findings are valuable for policy making, allocating resources, and reconsidering the paradigm for treating veterans with these injuries recognizing: (a) increasing number of veterans with PTSD, TBI and associated multisystem issues, (b) increasing number of female veterans, (c) increasing number of younger veterans with higher disability pensions (d) geographical areas with disproportionate numbers of veterans.

Conflict of interest statement: The authors report no actual or potential conflicts of interest with regard to this article.

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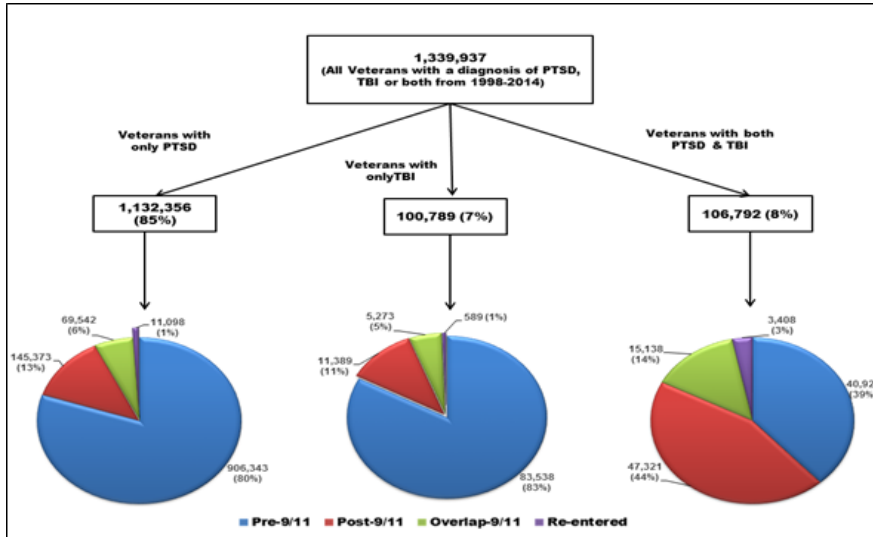


Figure 2: Relative distribution of veterans within in cohort with PTSD only, TBI only, or both PTSD and TBI diagnosis

Table 4: Average Age and Percentage Service Connection Across Different Service Periods

Service Period Groups	Average Age Years ± SD	Veterans with >50 % Service Connection Disability ratings			
		PTSD alone	TBI alone	PTSD + TBI	Total N (%)
Pre-9/11	66.3 ± 11.3	592,364	20,042	26,385	638,791 (62%)
Post-9/11	36.1 ± 8.7	91,464	5,138	38,538	135,140 (66 %)
Overlap-9/11	41.4 ± 8.2	51,032	3,079	13,110	67,221 (75%)
Re-entered	46.9 ± 9.2	8,155	334	2,994	11,491 (76%)

Biography

- Retired from VA after 32 years and 21 years of service in Army Reserve and 6 deployments.
- Former Clinical Director of PTSD Program and Assistant Clinical Professor at VAMC. Former Medical Director of Restorative Brain Clinic. Passionate working with war veterans, service members with PTSD, TBI and deployment related behavioural health issues and teach people how to overcome adversities.
- Dedicated life to mind body medicine and teach people preventive lifestyle changes to live long healthy lives.
- Author of three books with latest book, "Innovative Holistic Approaches to PTSD and Life stress" based upon studies of hundreds of people who were resilient despite going through numerous traumatic events.
- Recipient of "Legion of Merit," award and "Order of Military Medical Merit".
- Iraq, Afghanistan War Veteran, worked in Germany, Japan and Guatemala as Army physician

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The effectiveness of official development assistance in the health sector in Africa: A case study of Uganda

Cyriaque Sobtafo
University of Phoenix, USA

This qualitative explanatory case study assessed the influence of Official Development Assistance on selected health development indicators in Uganda between 2005 and 2013 by reviewing development partners' perceptions. Key health indicators included: (a) under five- year-old mortality rates, (b) infant mortality rates, and (c) maternal mortality ratio. Results indicated slow progress in reducing infant mortality and under-five mortality rates, and almost no progress in the maternal mortality ratio despite the disbursement of a yearly average of nearly

\$400 million USD in the last 7 years to the health sector in Uganda. Five bottlenecks in the influence of development assistance on health indicators were identified:

(a) poor governance and accountability in health care system in Uganda, (b) ineffective supply chain of health commodities, (c) negative cultural beliefs, (d) insufficient government funding to health care, (e) insufficient alignment of development assistance to the National Development Plan, and non-compliance with the Paris Declaration on Aid Effectiveness.

Biography

Dr Cyriaque Sobtafo is currently serving with the United Nations as Senior International Development Experts. He has over 25 years of experiences assisting developing countries in their efforts toward achieving sustainable developments. Dr Sobtafo has served in various parts of the world, including Africa, North America, Europe, the Balkans and Oceania, working both in development and humanitarian contexts. He hold a PhD of Management from the School of Advanced Studies at the University of Phoenix (US), a Dynamic Leadership certificate from Harvard Business School (US), a Master's degree in food technology from ENSAI of the University of Ngaoundere (Cameroon), and various certifications in development discourse from various universities.

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In ovo hyperglycemia causes congenital limb defects in chicken embryos *via* disruption of cell proliferation and apoptosis

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While the correlation between diabetes during pregnancy and birth defects is well-established, how hyperglycemia causes developmental abnormalities remains unclear. In this study, we developed a novel "hyperglycemic" chicken embryonic model by administering various doses of glucose to fertilized eggs at embryonic stages HH16 or HH24. When the embryos were collected at HH35, the LD50 was 1.57 g/Kg under HH16 treatment and 0.93 g/Kg under HH24 treatment, indicating that "hyperglycemic" environments can be lethal for the embryos. When exposed to a dose equal to or higher than 1 g/Kg glucose at HH16 or HH24, more than 40% of the surviving chicken embryos

displayed heart defects and/or limb defects. The limb defects were associated with proliferation defects of both the wing and leg buds indicated by reduced numbers of p-H3S10 labeled cells. These limb defects were also associated with ectopic apoptosis in the leg bud and expression changes of key apoptotic genes. Furthermore, glucose treatment induced decreased expression of genes involved in Shh-signaling, chondrogenesis, and digit patterning in the limb bud. In summary, our data demonstrated that a high-glucose environment induces congenital heart and limb defects associated with disrupted cell proliferation and apoptosis, possibly through depressed Shh-signaling

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Exploring & exploiting the homeostasis network orchestration & biomarkers in human health: Disease prevention

**Bene Ekine-Afolabi^{1,2,3}, Alex Buko⁴,
Onyinyechi Udo-Chijioko^{1,3} and Winston Morgan³**

¹ZEAB Therapeutic LTD, UK

²High Impact Cancer Research, Harvard Medical School, USA

³School of Health, Sport & Bioscience, University of East London, United Kingdom

⁴Human Metabolome Technologies, USA

Background: The implications of disease in human are mostly addressed from the progression stage. For instance, Colorectal cancer is mostly diagnosed at age 50 years and above for non-hereditary colorectal cancer. Insufficient attention has been focused on understanding the early progression of diseases, particularly colorectal cancer, prior to the age in which most diagnosis occurs. Homeostasis biomarkers have not been given enough attention. Importantly, one of the key elements in homeostasis, glutathione, and its associated operating genes, have not been well elucidated in disease initiation, promotion, and progression. Additionally, the interplay theglutathione pathway has with other physiological functions and how they orchestrate in homeostasis is yet to be fully elucidated.

Methods: Targeted quantitative analysis was performed on 41 samples of colon cancer and normal cell lines using capillary electrophoresis mass spectrometry (CE-TOFMS and CE-QqQMS) in the cation and anion analysis modes

for analysing cationic and anionic metabolites, respectively. A total of 116 metabolites (54 and 62 metabolites in the cation and anion mode, respectively) involved in glycolysis, pentose phosphate pathway, tricarboxylic acid (TCA) cycle, urea cycle, and polyamine, creatine, purine,glutathione, nicotinamide, choline, and amino acid metabolisms were annotated based on the HMT metabolite database.

Results: In both colon cancer cell lines, HCT-116 and HT-29, there were treatment effects from the addition of fiber and bile acids. Bile acid-A alone appeared to increase oxidative stress, osmotic stress, drive ATP demand and increase NAD⁺/NADH ratio – consistent with a tumor promoter role.

Bile acid-B alone decreased levels of oxidative and osmotic stress and energy demand. Bile acid-B magnified decrease levels of oxidative and osmotic stress and energy demand when Bile acid-A and/or Fiber was added.

The effects were similar between HCT-116 and HT-29, but not duplicative, as these are two different cancer cell lines.

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Conclusion: HCT-116 and HT-29 are colon cancer cell lines that exhibit proliferation in culture. Metabolomic profiling exhibits osmotic, energy and oxidative stress in these cell lines compared to normal colon cells. With

different combinations of bile acids and fibres, it has been demonstrated that cellular stress in the colon cancer cells can be reduced to more normal levels.

Biography

BeneEkine-Afolabi is a graduate of River State University of Science & Technology in Applied Biology (Medical Microbiology option); with an MRes degree at University of East London, United Kingdom.

She had her PhD. study & worked at the Department of Natural Sciences, Middlesex University, UK. Trained in practical approach to toxicology in drug development (American College of Toxicology/British Toxicology Society). Bene does research in Microbiology, Molecular Biology and Cancer: Her current focus of research (which has yielded eight designed models), is on the Investigation of molecular mechanism of colorectal cancer and due to the current pandemic, has been involved in drug development for COVID-19. Bene had Harvard University part-sponsored training in therapeutic research in Cancer Biology & Therapeutic. Bene has been involved in three published peer reviewed article, two manuscript awaiting publication, among which one is on COVID-19 and was submitted to the Chief Medical Officer of United Kingdom to assist in response to the pandemic.

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The health-seeking itinerary of individuals with morbid obesity for bariatric surgery in the public healthcare system

Claudete Aparecida Conz¹, Brazil Vanessa Augusta Souza Braga², Miriam Aparecida Barbosa Merighi³, Maria Cristina Pinto de Jesus⁴, Juiz de Fora, Brazil Estela Kortchmar⁵, Brazil Rosianne Vasconcelos⁶ and André Luiz Perez Nicolla⁷

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^{6,7}Heart Hospital (Hcor), Brazil

Objective: To understand the health-seeking experience of individuals with morbid obesity in search of bariatric surgery in the public healthcare system.

Methods: This was a qualitative study based on social phenomenology with 17 individuals with morbid obesity, hospitalized, and scheduled for bariatric surgery in a public hospital in the city of São Paulo, Brazil. Interviews were carried out based on the following guiding questions: How was your search for bariatric surgery? What are your expectations after the surgery?

Results: Individuals with morbid obesity in search of bariatric surgery have (i) experienced a health-seeking itinerary in public healthcare services; (ii) dealt with long waiting times for surgery, which contributed to weight gain and triggered biopsychosocial issues and limitations in their daily lives; (iii) felt careless due to the gap between the care received and that recommended by health policies, programs, and guidelines; (iv)

considered the assistance of health professionals essential for them to navigate the health itinerary and obtain approval for bariatric surgery; and (v) expected structural improvements in the healthcare network and care practices carried out by a trained multidisciplinary team; and (vi) expected a reduction in the gap between the care delivered by the public healthcare service and the therapeutic itinerary experienced by them.

Conclusion: When following a health-seeking itinerary for bariatric surgery, individuals with morbid obesity experienced difficulties and obstacles that led them to seek and use resources that were not always available in the healthcare system. The aspects involved in such an itinerary highlighted a need of strengthening the care flow in the healthcare system and investing in professional training to reduce inequalities in access to bariatric surgery, which can substantially increase the quality of care delivery through interventions that encourage autonomy and self-management of the body weight.

Biography

C. A. Conz has a degree in Nursing from the University of Sagrado Coração (1992); a master's degree in Nursing from the University of São Paulo School of Nursing (2008); and a Ph.D. degree in Science from the University of São Paulo School of Nursing (2019). Currently, she is a professor in the Graduate Program of the Centro Universitário São Camilo at Faculdades Metropolitanas Unidas and has a temporary assistant professor position at the University of São Paulo School of Nursing. C. A. Conz has experience in the field of Nursing, with an emphasis on Intensive Care Nursing, and has worked mainly on the following topics: adult, pediatric, and neonatal intensive care nursing. Research area: individuals with obesity.

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Intersection of data technology with humanity – The plight of health disparities

Deborah Guadalupe Duran

NIH/National Institute of Minority Health and Health Disparities, USA

Technology has just as much potential to unleash humanity as to replace or hinder it. Technology enables mega-shifts that redraw not only commerce, culture and society, but also our biology and ethics. Health technologies aim to improve individual and population health but appears to exacerbate health disparities in its current state. Even in the surging of digital advancements, it is known that health technologies benefit some groups more than others. A lack of acknowledgment of these inequities could lead to their further propagation and widen the digital divide by disproportionately not providing beneficial technologies to marginalized groups that already have health-related disadvantages. These fundamental technology contributors to health disparity can be mitigated. Be aware and care:

Big data and data science: There are concerns about whether applications of big data research will help to reduce existing health disparities or whether they might inadvertently exacerbate these disparities. Analyses of big data have the potential to elucidate ways in which socioeconomic status, race and ethnicity, and other social determinants of health (SDOH) contribute to disease/disorder incidence and outcomes. Also, may identify promising avenues for intervention. However,

the underrepresentation of minority and vulnerable populations in big datasets and inappropriate data analyses have the potential to generate biased and inaccurate conclusions that threaten equitable progress in biomedical research and health care.

Data curation and missing metrics: To eliminate health disparities, it is critical to first know where the disparity exists. Many health care data platforms miss critical information regarding the person, such as race/ethnicity, primary language spoken, and written language. Yet, have a requirement to collect. Also missing are the social determinants of health (SDOH). SDOH are shaped by the distribution of money, power, and resources at global/national/local levels, and are major drivers of health inequities, including differences in health status. SDOH are powerful influences on health outcomes as most recently demonstrated by covid. In addition, there is no requirement to collect this information in a standardized way or to harmonize semantics to enhance interoperability. Deficiencies in racial and ethnic data may prevent providers from conducting meaningful risk stratification for chronic diseases or acute conditions more prevalent in certain groups. Incomplete data makes it more difficult for providers to create meaningful population health management

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plans that address the specific needs of their communities. These mitigatable deficiencies needlessly contribute to health disparities, The ability to stratify reporting of health quality measures, to target disparities, and to understand effective interventions or strategies for addressing disparities depends on the ability to curate this information consistently with common semantics and data models.

Unintentional analytic biases: Most organizations are committed to avoiding harms due to data paucity, biased designs, and inappropriate analytics. Assumably, most biases are accidental and negligent, not intentional. However, all data is immutable and models do precisely what taught to do. Big data analytics advances the use of artificial intelligence, machine learning, deep learning and natural language processing. These tools often require algorithms, pattern recognitions

and language management, which have been plagued with biases regarding vulnerable populations. Some of these biases are due to poorly designed algorithms, measurement mishaps, and mismanaged training, which can cause second order harms, such as loss of opportunity, medical harm, economic loss, loss of liberty and social detriments, that exacerbate health disparities. These too can be mitigated to provide appropriate health care to all populations.

Summary: Most contributors to health disparities can be mitigated. Now is the time to address data collection, curation, management, analytics, interpretations, and application issues to eliminate health disparities. Without this mitigation in the science of data technologies, health disparities will be more burdensome to self and to society.

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Physical activity effects on bladder dysfunction in an obese and insulin resistant murine model

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Objective: To investigate the role of physical activity in functional and molecular bladder alterations in an obese and insulin resistant murine model.

Methods: Wistar rats were randomized into 1. Physical activity and standard diet; 2. Physical activity and high fat diet; 3. No physical activity and standard diet; 4. No physical activity and high fat diet. Group 1 and 2 were subjected to a 10-week swimming protocol. Urodynamic study (UDS) was performed and the expression of genes in the bladder tissue related to the insulin pathway (IRS1/IRS2/PI3K/AKT/eNOS) was assessed using quantitative real-time polymerase chain reaction.

Results: Groups 1 and 2 presented lower body weight gains than groups 3 (213.89±13.77 vs 261.63±34.20 grams (g), p=0.04) and 4 (209.84±27.40 vs 257.57±32.95 g, p=0.04), respectively. Group 4 had higher insulin level

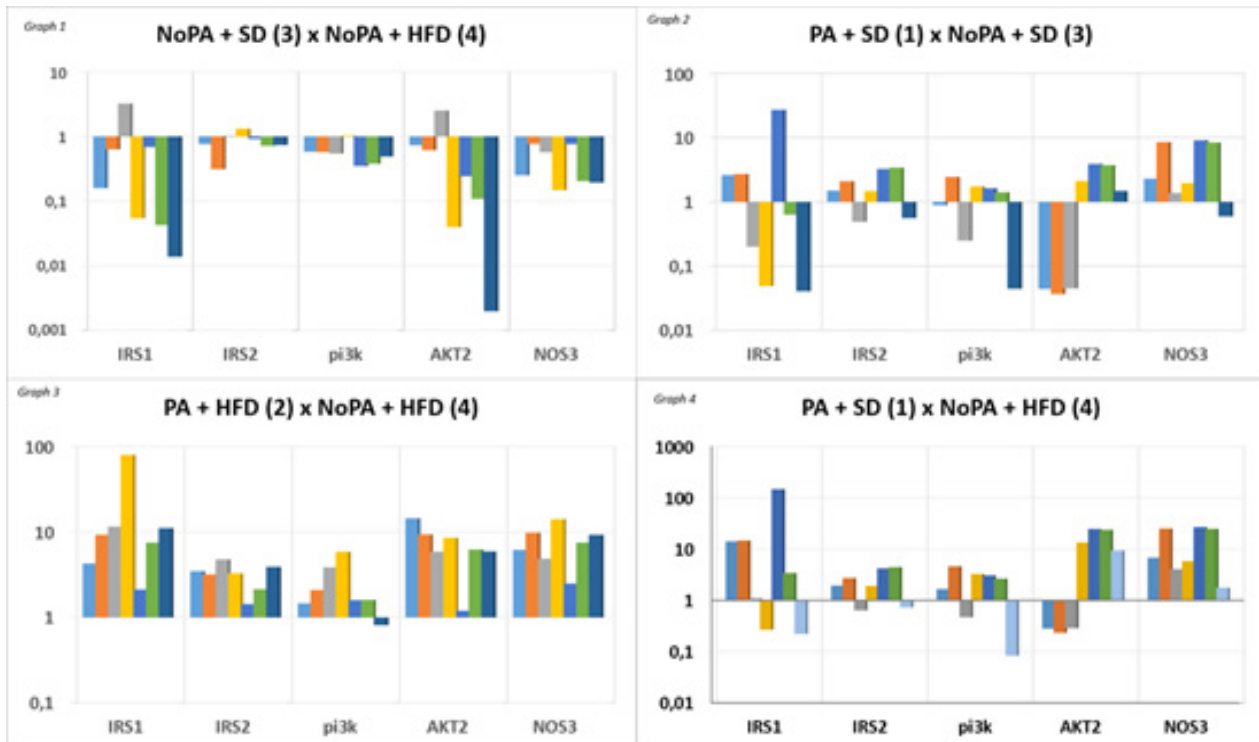
(6.05±1.79 vs 4.14±1.14 ng/ml, p=0.038) and higher homeostasis model assessment of insulin resistance (HOMA-IR) index (1.95±0.73 vs 1.09±0.37, p=0.006) than group 1. On UDS, Group 4 had greater number of micturition (13.6±4.21 vs 6.0±1.82, p=0.04), higher post-void pressure (8.06±2.24 vs 5.08±1.23, p=0.04), lower capacity (0.29±0.18 vs 0.91±0.41 ml, p=0.008) and lower bladder compliance (0.027±0.014 vs 0.091±0.034 ml/mmHg, p=0.016) versus group 1. High fat diet was related to an underexpression throughout insulin signaling pathway and physical activity was related to an overexpression of the pathway.

Conclusions: The insulin signaling pathway may be involved in the pathogenesis of bladder dysfunction related to a high fat diet. Physical activity may help to prevent bladder dysfunction induced by a high fat diet through the insulin pathway.

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Biography

M.D., P.h.D.

Assistant Professor of Urology at Pontificia Universidade Católica, Curitiba Brazil.

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Putting the 'Good' into Good clinical practice

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The Guideline for Good Clinical Practice (ICH GCP) is being revised to address concerns about its utility, but this may take years. In this article, we showcase existing examples of sensible and workable national policy for clinical trials in Europe, the United States and Australia. We highlight that ICH GCP is not a legal requirement in any of these regions and call for the ICH Committee to build into the next version of ICH GCP, the flexibility already present in many national regulatory frameworks. Whilst the principles laid down in ICH GCP form the bedrock for trial conduct internationally, we examine whether some of its detail is truly evidence-based. We also question whether a Guideline co-created

by the Pharmaceutical Industry and Regulators can ever reflect the views of the stakeholders it impacts.

Flexibility in the way ICH GCP is applied is especially critical for low-risk, comparative effectiveness trials. These trials have the potential to rapidly improve public health and reduce the healthcare cost but are currently mired in levels of bureaucracy that unnecessarily hamper the generation of the evidence needed to do so. We use key trial activities, including informed consent and safety reporting to illustrate how a proportionate approach to regulation could create an agile framework that facilitates these trials whilst still protecting trial participants.

Biography

Tanya Symons has worked in the field of clinical research for over 25 years as a researcher and as a government consultant in the United Kingdom and Australia. Her outputs include the National Institute of Health Research (NIHR) Clinical Trials Toolkit, an internationally recognised resource designed to help researchers navigate the complex regulatory requirements for clinical trials. In Australia, she has authored several national guidelines including the National Health and Medical Research Council (NHMRC) Guidance: *Safety monitoring and reporting in clinical trials involving therapeutic goods*, the Australian Clinical Trial Alliance's *Consumer Involvement and Engagement Toolkit* and co-authored the Therapeutic Goods Administration (TGA) *Australian Clinical Trials Handbook*. Tanya has also provided Good Clinical Practice training to many biomedical research organisations in the UK and Australia. Her current research interest (and the topic of her PhD) is using proportionate consent models in a Learning Healthcare System.

Pelvic organ prolapse and treatment decisions—Developing an online preference-sensitive tool to support shared decisions

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⁸Lillebaelt Hospital, Denmark

Female patients with urogenital prolapse and gynecologists need to take treatment decisions that are often unpredictable regarding impact on the future everyday lives of the patients. Shared decision-making (SDM) elicits patients preferences in order to share decisions and involve patients actively into the decision making process.

The aim of this study was to develop a feasible IT-based instrument to support the dialogue and SDM between patients and gynecologists during consultations. The instrument should elicit and weight patients' preferences and combine these with evidence into ranked treatment options that were presented during consultations.

Methods: The study had a design of user involving field research and a development phase using the contextual design method together with the participatory design

technique of prompting cards. Observations, ten exploratory interviews and five workshops prompted for emotional stories and identified the users' needs. Five additional workshops decided for evidence and best estimates for the instruments algorithm. The design process tested for usability of the instrument in an iterative process (Figure 1).

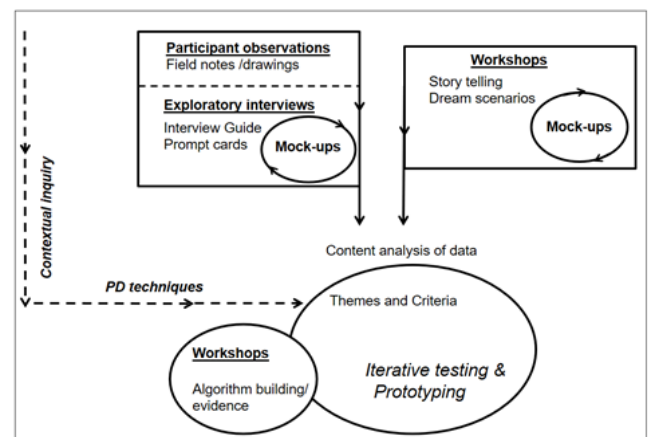


Figure 1. Design process – Field research, design and testing for prototype. Hulbaek et al., BMC Medical Informatics and Decision Making, 2020

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Results: Data was collected from four Danish gynecology outpatient clinics. Content analysis led to important themes and 16 criteria for the home-based preference-sensitive questions. For the patients three themes emerged: 1) how the impact of symptoms on everyday life affected the need for relief, 2) their bodily perception and sex life and 3) their worries about the future (table 1).

For gynecologists the different symptoms and

their severity was a main theme.

Conclusion: The study demonstrates how user involvement informed the prototyping process and how patients' preferences could be included in the final prototype through an algorithm. The developed algorithm, the eliciting questions and a graphical presentation in the patient's health record gave way to each patient's individual preferences and her involvement in the decision-making process.



Method / Probing with prompt cards	Results / emotional stories	Analysis and conclusion
	<p><i>That's me ... (laughing and pointing at the woman with the ponytail that is vacuum cleaning). I work have been working at the school for 15 years (looks emotional).</i></p> <p><i>Yes, it (the urogenital prolapse) bothers me when I work. I have to walk... a little bit with spread legs all the time.</i></p> <p><i>I am a bit of a brave woman ... I told my work mate about it.</i></p> <p><i>One day I took a picture and I could see it was ... like an egg between my legs. I thought, I have a penis between my legs (laughing nervously). I removed that picture afterwards. I do not have it any more... It was strange (grimacing).</i></p> <p>Participant 1, 48 years old.</p>	<p>Thematic analysis => Construction of the instrument</p> <p>Women found that symptoms could affect their sex life. If confronted, they did not want to feel like patients with specific symptoms in the sexual area. They were sad or felt offended if they were not seen as individuals first and foremost. The symptoms from the sexual area could become a part of their identity which could alter their lives immensely.</p> <p>Symptoms could affect the women's perception of themselves even if the specific symptom might not be measurable or even visible. And the perception of symptoms altered their body image. Body image and self-perception of their body played an important role in their sex life. Sex life was not only connected to the physical ability for sexual activity but also to self-imagining.</p> <p>For many women, a sex life in the future was very important even if not problematized or verbalized during the consultation. This was even the case for women who at the moment had no sex life or sexual problems.</p> <p>Identified important theme: Bodily perception and sex life</p> <p>Construction of the instrument should recognize symptoms in the sexual area. Most importantly, it should explore more than physical situations, e.g., during the sexual act thereby explore their sex life and their body image in a more holistic perspective.</p> <p>Construction should explore sex life now and in the future.</p> <p>The patient's answers to the home-based questions led to elicited preferences. Afterwards, the algorithm within the digital instrument (an app) could transform preferences and evidence to the ranked treatment option at the interface of the patient's health record.</p>
	<p><i>I am sorry to have spent 18 years where I struggled with my sexual life ...and well... felt wrong (tears in her eyes).</i></p> <p><i>Eighteen years ago I gave birth to my son. After that it was a problem. I did not want to go to the public swimming pool because I felt so wrong and looked different (the patients urogenital prolapse is not visible for the spectator).</i></p> <p><i>It has affected my sex life a lot. Since then I have been embarrassed about it, in front of my husband...and if you don't have that part than you are not that close. A wonder that he is still around (crying). Everybody has the right to a good sex life.</i></p> <p>Participant 3, 46 years old.</p>	

Table 1. Example of how two prompt cards probed for emotional stories.

Hulbaek et al., BMC Medical Informatics and Decision Making, 2020

Results: Data was collected from four Danish gynecology outpatient clinics. Content analysis led to important themes and 16 criteria for the home-based preference-sensitive questions. For the patients three themes emerged: 1) how the impact of symptoms on everyday life affected the need for relief, 2) their bodily perception and sex life and 3) their worries about the future (table 1). For gynecologists the different symptoms and their severity was a main theme.

Biography

Mette Hulbaek registered as a nurse in 1992, from Bispebjerg Nursing Academy, Copenhagen. She performed specialist urogynecology patient care within urodynamic evaluations and urinary- and fecal incontinence since 2000. The last ten years at the department of Gynecology and Obstetrics, University Hospital of Sønderjylland, Denmark.

She holds a PhD degree from Southern University of Denmark in Health Science entitled 'Developing and testing an online tool for patients with pelvic organ prolapse to support shared decision making'. Her work evolves around patient involvement and the concept of shared decision-making especially for patients with pelvic floor disorder and their multidisciplinary consultations.

She was a founding member of the first international society in 2018 for shared decision making in healthcare - the ISDM Society (the International Shared Decision Making Soc.) and for several years board member of the Danish Patients Continence Society working for increased patient involvement in their incontinence care.

Theme: Rise in Preventive Medicine and Public Health Research Market Through New Medical Technologies, Treatments and Up-to-date Studies Worldwide

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Association between Preeclampsia and Prostatein Polymorphism in Pakistani females

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Objectives: To investigate the relationship between a prostatein gene variations and the development of preeclampsia in a Pakistani female population.

Methods: This was a case-control study carried out at University of Karachi, Karachi, Pakistan between May 2018 and 2019. A single nucleotide polymorphism (SNP) at rs12597511 locus was examined with polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) analyses in 76 preeclamptic and 74 normotensive expecting mothers.

Results: We observed significantly increased risk of preeclampsia associated with the CC


genotype of rs12597511 polymorphism as compared to TT ($p < 0.001$, OR = 8.08, 95% CI: 1.28-31.19) and TT/TC ($p < 0.001$, OR = 14.66 and 95% CI: 3.31-65.07) genotypes carriers. Calculation of the allelic distribution revealed a higher frequency of the T allele (82%) among controls; however, the C allele was more prevalent in the preeclamptic group (36%) significantly.

Conclusion: The significantly higher C allele frequency in the prostatein gene at the rs12597511 locus in the preeclamptic group indicates that the distribution of the C allele of the prostatein gene is a potential risk factor contributing to the development of preeclampsia.

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The maternal referral mobile application system for minimizing the risk of childbirth

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Introduction: The maternal mortality rate in Surabaya in the last 3 years has decreased significantly, but it is still quite high at 79.40 per 100,000 live births in 2017. Even though it has shown good progress, Surabaya still occupies the second largest maternal mortality rate in the province East Java. The causes of maternal deaths included 3 being late (late in making a decision, late arriving at a health facility and late in receiving medical help). In-depth interview results in 6 Puskesmas in Surabaya, one of the other problems that risked causing maternal death was in the process of referring to the mother giving birth, because the Puskesmas had difficulty getting hospitals with available resources to accept the condition of the pregnant women to be referred. The issue of referral communication between the Puskesmas and the Hospital has become very important to be resolved, one of which is by developing a mobile app system in finding hospitals available for their resources to accept the condition of pregnant women to be referred. The main function of this mobile app is to reduce the risk of death for the mother in the delivery process. The purpose of this study is to

develop a mobile app system framework for the maternal referral system.

Methods: The mobile app is compiled with the user of the Puskesmas midwife and the IRD officer of the referral hospital. This mobile app is compiled based on the results of the FGD with midwives, doctors and puskesmas heads about the referral system regulation contained in Surabaya City and FGD with obstetricians who agree on several indicators of maternal conditions that must be considered in the referral process and also refer back. This mobile app was developed with internet communication and SMS media with the default internet. So if the gadget is out of reach of the internet, then broadcast the message using the SMS feature. This automation was developed so as not to inhibit the sending of messages in an emergency.

Result and Discussion: The communication flow of this mobile app is to order emergency conditions at the puskesmas puskesmas to the hospital through the mobile app system, the available hospital resources based on the condition of patients being broadcasted responding to

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messages through the mobile app system, patients are referred and treated in hospitals. The process will end with referring back to the Puskesmas as a control service after giving birth. This mobile app has gone through a trial and development process currently in the process of structuring the mobile

app based on the bugs that occur in the system.

Conclusion: This mobile app still needs development, especially in minimizing system bugs, because this mobile app-based referral system requires fast and accurate communication.



Factors affecting quality of life among parents having a child with autism spectrum disorder in Jeddah, 2019

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¹The Joint Program of Saudi Board in Preventive Medicine, Saudi Arabia

²Saudi Board Program in Preventive Medicine, Saudi Arabia

³Saudi National Center for Developmental and Behavioral Disorders in East Jeddah Hospital, Saudi Arabia

Background: Nurturing a child with Autism Spectrum Disorder (ASD) can cause major distress. As a result, these parents tend to experience a poor quality of life (QoL) compared to those raising typically developing (TD) children.

Objectives: To evaluate the factors which affect the QoL of parents raising children clinically-diagnosed with ASD in Jeddah, and to provide knowledge for the establishment of comprehensive policies and projects that can improve their mental well-being.

Materials and Methods: A cross-sectional study design was utilized to assess 200 parents of children clinically-diagnosed with ASD at least 3 months prior to the research. A self-administered WHOQOLBREF questionnaire was employed to assess the QoL of participants through four domains, namely physical health, psychological well-being, social relationships, and environment.

Results: Most of the participants were female (58.5%), married (87.0%), and employed (56.5%). Majority completed high school (68.5%), lived in the city (95.5%) and rented their homes (88.5%). Quality of life was significantly affected by gender, employment, social status, and educational attainment of participants. Parents with higher educational attainment and employment and social status exhibited better. Furthermore, female parents experienced lower QoL and more depressive symptoms than males.

Conclusion: Gender, educational attainment, and both employment and social status significantly affected the QoL of parents raising children diagnosed with ASD. Furthermore, improving the physical health, psychological, social relationships, and environment of these parents would give them a better QoL and health satisfaction.

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Table 1: Characteristics of the participants of the study (n=200).

Demographics	N	Max	Min	Mean	SD
Age	195	23	45	34.46	4.7
Family members	39	2	10	3.51	1.7
		Frequency			%
Total		200			100.0
Gender	Male	83			41.5
	Female	117			58.5
Education	Primary	8			4.0
	Elementary	39			19.5
	High School	137			68.5
Social Status	Postgraduate	16			8.0
	Single	1			.5
	Married	174			87.0
Residence	Widow	3			1.5
	Divorced	22			11.0
House	Rural	9			4.5
	Urban	191			95.5
Employment	Owned	23			11.5
	Rent	177			88.5
Employment	Yes	112			56.6
	No	86			43.4
	Missing	2			

Table 2: Independent t-test, Welch's t-test, and One-Way ANOVA test between gender, education, housing, and employment of the parents and the corresponding domains (physical health, psychological, social relationships, and environment).

Biography

Dr. Abeer Ahmad Subke is 40 years old Saudi female Senior Registrar Physician working in Ministry of Health in Jeddah, Saudi Arabia. She holds a Bachelor degree in Medicine and general Surgery from King Abdul Aziz University in Jeddah, 2007. Her passion in quality of care has motivated her to attain a post graduate Diploma in Healthcare Quality Management from the American University in Cairo, 2010. That was followed by attaining a higher level of recognition by becoming a Certified Professional in Healthcare Quality (CPHQ) since 2012 till present. Recently she has become Board certified from the Saudi Board in Preventive Medicine, 2020. Currently she is a Senior Registrar in Ministry of Health and working as an Academic staff in the Joint Program of Preventive Medicine in Jeddah.



Disentangling factors in the cross-sectorial workflow of patients with COPD

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²Department of Regional Health Research, University of Southern Denmark, Denmark

³Open Patient data Explorative Network (OPEN), Region of Southern Denmark, Denmark

Background: Chronic obstructive lung disease (COPD) is a very serious and common chronic condition. Not all patients having COPD are referred to rehabilitation even though they can benefit from rehabilitation initiatives.

Scope: The overall objective of this research project is to ensure referral and uptake for COPD rehabilitation. We focus on detangling the processes in the cross-sectorial workflow of patients with COPD to understand why most patients are not referred to rehabilitation.

Methods: We used the functional resonance analysis method (FRAM) to map referring routines from hospital to municipality.

We furthermore facilitated cross-sectorial relational coordination by establishing local- and cross sectorial network groups.

Results: We found that staff at the hospital and

the municipality had different understandings of what rehabilitation is, and they used different words for the same services. Furthermore, hospital staff lack knowledge of what the municipality has to offer patients with COPD.

The network groups revealed flaws in the referral system which needed to be adjusted.

Conclusion: The FRAM analysis showed how the work was done in real life and detangled factors important to the collaboration. Based on the FRAM the municipality and hospital had a workshop where they agreed to on activities that should be set up to improve the cross-sectorial relations.

This resulted in a simplified referral procedures, however ongoing adjustments are made continually based on recommendations from the network groups.

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High prevalence of intestinal pathogens in indigenous in Colombia

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²Comprehensive Cancer Center Mainfranken, University Hospital of Wuerzburg, Germany

³Institución Prestadora de Servicios de Salud Indígena, Colombia

⁴Laboratorio Salud Pública Departamental, Colombia

⁵Institute for Medical Microbiology, University Medicine Rostock, Germany

⁶Department of Microbiology and Hospital Hygiene, Bundeswehr Central Hospital Koblenz, Germany

⁷Institute for Medical Teaching and Medical Educational Research, University Hospital Wuerzburg, Germany

⁸Department of Microbiology and Hospital Hygiene, Bundeswehr Hospital Hamburg, Germany

Background: Intestinal infections remain a major public health burden in developing countries. Due to social, ecological, environmental and cultural conditions, Indigenous peoples in Colombia are at particularly high risk.

Materials: 137 stool samples were analyzed by microscopy and real-time-Polymerase Chain Reaction (RT-PCR), targeting protozoan parasites (*Giardia intestinalis*, *Entamoeba histolytica*, *Cryptosporidium* spp., and *Cyclospora cayentanensis*), bacteria (*Campylobacter jejuni*, *Salmonella* spp., *Shigella* spp./enteroinvasive *E. coli* (EIEC), *Yersinia* spp., enterohemorrhagic *E. coli* (EHEC), enteropathogenic *E. coli* (EPEC), enterotoxin-producing *E. coli* (ETEC), enteroaggregative *E. coli* (EAEC), and *Tropheryma whipplei*), and helminths (*Necator americanus*, *Strongyloides stercoralis*, *Ascaris lumbricoides*, *Ancylostoma* spp.,

Trichuris trichiura, *Taenia* spp., *Hymenolepis nana*, *Enterobius vermicularis*, and *Schistosoma* spp.). Microscopy found additional cases of helminth infections.

Results: At least one pathogen was detected in 93% of the samples. The overall results revealed protozoa in 79%, helminths in 69%, and bacteria in 41%. *G. intestinalis* (48%), *Necator*/hookworm (27%), and EAEC (68%) were the most common in each group. Noteworthy, *T. whipplei* was positive in 7% and *T. trichiura* in 23% of the samples. A significant association of one infection promoting the other was determined for *G. intestinalis* and *C. jejuni*, helminth infections, and EIEC.

Conclusions: The results illustrate the high burden of gastrointestinal pathogens among Indigenous peoples compared to the developing countries. Counter measures are urgently required.

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Biography

1992 – 1998	Friedrich-Wilhelms-University Bonn, Faculty of Medicine
2001	Thesis, Medical Clinic University Bonn,
2002 – 2003	Postdoctorate: Department of Environmental Health/Medical Center, Division of Toxicology, University of Cincinnati, USA
2003 – 2005	Grünenthal GmbH, Corporate Regulatory and Safety Affairs, Division Clinical Safety, Research and Development, Aachen, Germany
2005 – 2008	Medical Clinic University Bonn, different departments (e.g. ICU, Oncology, General Internal Medicine, Outdoor Patients Department)
2006	Diploma for Tropical Medicine (DTM), Hamburg, Germany
2006	Degree as Emergency physician
2008	Specialty in Internal Medicine
2008-2009	Charité – University Medicine Berlin, Institute for Tropical Medicine
2009 - 2010	University Rostock, Department of Tropical Medicine and Infectious Diseases
2010-2011	Heinrich-Heine University Düsseldorf, Department of Gastroenterology, Hepatology and Infectious Diseases, Ward for Infectious Diseases and Tropical Medicine
2010	Qualification for Travel medicine and Vaccinations
2011 - 2012	Adama-University, Medical Campus, School of Health and Hospital, Asella/Ethiopia, Long-term Lecturer, promoted by the German Academic Exchange Service (DAAD)
2012	Degree in Tropical Medicine
2013	Degree in Infectiology
2013-2015	Bernhard-Nocht-Institute for Tropical Medicine, Hamburg, Project Manager for the European Fund for regional development (EFRE) program, Study in Colombia
2015-now	Project Manager at the Medical Mission Institute, Focus on Neglected Tropical Diseases, patented Chagas-Real-Time PCR

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Analysis of COVID-19 clusters related to eating and drinking using a time work flow chart

Tsuchiya Hitoshi

Gunma Paz University, Japan

Background (Introduction): COVID-19 has caused serious damage in every country around the world. Some countries have implemented a lock down for a short period seeking to both address the COVID-19 issue while carrying out economic activities. Vaccinations have also begun in some countries, but a significant effect has yet to be seen. Rather, in actuality infections continue to increase at a slow pace.

Objective (Purpose): Although lock downs and limits on operating hours for restaurants have been implemented, infection clusters originating from restaurants still occur. Recently, clusters which originate in the family have also occurred. Here, specific causes of clusters are analyzed and a countermeasure recommendation is reported.

Method: A person must take off his mask while eating and drinking. If one is alone, not to putting the mask back on is fine. However, if others are present, the possibility of infection by airborne droplets during conversation cannot be dismissed. However, when eating

and drinking in a group, most people do not put their mask back on. This is clearly a "rule violation." Consequently, actual conditions are shown using t-WFC, an analysis of COVID-19 clusters is carried out, and a countermeasure is proposed.

Results: There is no guarantee that the others with whom one is eating and drinking are not infected. The person may be in the incubation period, or being a carrier without symptoms. Consequently, when not eating alone, one should wear a mask. In addition, efficacy of a mask varies by type. More effective masks should be used. There are some rules in time for meal together, such as social distancing, the number of participants, etc. However, effective mask use can prevent infection while eating and drinking.

Conclusion: The misconception that the eating and drinking members do not have virus should be corrected.

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Cellular mechanisms of cadmium-induced toxicity and interaction with organic and inorganic nanoparticles

Patrizia Guidi, Margherita Bernardeschi, Mara Palumbo, Vittoria Scarcelli and Giada Frenzilli
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Among emerging pollutants, potential effects coming from their contemporary presence with nanoparticles (NPs) in the environment are of great concern. The co-existence of NPs of classical and emerging pollutants into the aquatic system potentially modifies their interaction with the biota. Within classical pollutants, Cd and Cd-compounds have been classified as human carcinogens by the International Agency for Research on Cancer (IARC), representing an environmental problem that also involves human health. Among cellular cadmium effects, the most important seem to be cadmium interaction with DNA repair mechanisms, generation of reactive oxygen species and induction of apoptosis. The present study aimed to investigate if cellular mechanisms of cadmium-induced toxicity resulted affected by the interaction between organic and inorganic nanoparticles. Cellular responses were investigated in cadmium-contaminated marine waters after exposure of both organic and inorganic NPs: two forms of commercial nano-TiO₂ and carbon black (CB)-derived hydrophilic NPs. Portions of the marine mussel *Mytilus galloprovincialis*

gill tissue were exposed to CdCl₂ in presence of selected NPs to simulate the interactions between cells and xenobiotics. DNA primary damage was evaluated by the alkaline version of Comet assay; chromosomal damage and cell proliferation were assessed by Cytome assay; apoptosis was evaluated by Diffusion assay. Moreover, TEM in cell was planned to check the actual internalization of NPs, in order to verify that the potential genotoxic effects induced by NPs were paralleled by their cellular uptake. An induction of apoptosis in gill cells from CdCl₂ treated biopsies was observed while the level of apoptotic cells exerted by CdCl₂ was recovered to the control level in gill biopsies co-treated with CdCl₂ and NPs (both organic and inorganic). In terms of DNA primary damage the selected NPs did not exert genotoxicity when tested alone, and only the inorganic ones were able to reduce the DNA damage level exerted by cadmium treatment even though not to the control level. These results provided informations for the innovative remediation approaches aimed to promote the use of nanoparticles (NPs) to clean metal-contaminated waters for human and environmental health protection.

Biography

Patrizia Guidi defended her PhD thesis in 2011 at University of Pisa (Italy). She is a biologist, and, at the moment, she is Assistant Professor of Applied Biology at the University of Pisa. Her research is focusing on cellular responses and genotoxic effects of nanomaterials and xenobiotics. She has published 22 papers in reputed journals and many abstracts presented at national and international congresses

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Efficacy and safety of Tocilizumab in severe and critical COVID-19: A systematic review and meta-analysis

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Objectives: Currently published papers and clinical guidelines regarding the effects of tocilizumab in severe and critical COVID-19 are contradictory. The aim of this meta-analysis was to combine the results of clinical studies of different designs to investigate the efficacy and safety of tocilizumab in severely-to-critically ill COVID-19 patients.

Methods: A systematic search was performed in PubMed, Embase, CENTRAL, ClinicalTrials.gov, Scopus, and preprint servers up to 26 December 2020. Since a substantial heterogeneity was expected, a random-effects model was applied to calculate the pooled effect size (ES) and 95% confidence interval (CI) for each study outcome.

Results: Forty-five comparative studies involving 13,189 patients and 28 single-arm studies involving 1,770 patients were analyzed. The risk of mortality (RR of 0.76 [95%CI 0.65 to 0.89], $P < 0.01$) and intubation (RR of 0.48 [95%CI 0.24 to 0.97], $P = 0.04$) were lower in tocilizumab patients compared with controls. We did not find any significant difference in secondary infections, length of hospital stay, hospital discharge before day 14, and ICU admission between groups.

Conclusion: Tocilizumab can improve clinical outcomes and reduce mortality rates in severe to critical COVID-19 patients. Large-scale randomized controlled trials are still required to improve the statistical power of meta-analysis.


Biography

Soheila Rezaei is Pharm.D and Ph.D. candidate of Pharmacoeconomics and pharma management, Pharmacy Faculty of Shahid Beheshti Medical University, Tehran, Iran. She interested in some topics of public health that related to Health Economics and Outcome Research, Medication adherence, and Pharmacoeconomics evaluation study. She has been in charge of execution of several scientific studies and cost-effectiveness analysis projects for multinational company offices in Iran like Sanofi Aventis, Roche, and Novo Nordisk. Also, she is finalizing her Ph.D. thesis entitled "Development and empirical analysis of a conceptual model of cost-related medication nonadherence in Iranian elderly patients". Her ambition and desire to everyday learning and quickly growing is highly appreciated by her colleagues and academic professors. She is an exemplary wife and mother, too

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A systematic survey of PRMT interactomes reveals the key roles of arginine methylation in the global control of RNA splicing and translation

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Objectives: Thousands of proteins undergo arginine methylation, a widespread post-translational modification catalyzed by several protein arginine methyltransferases (PRMTs). However, global understanding of their molecular mechanisms and biological functions is limited due to the lack of a complete picture of the catalytic network for each PRMT and the absence of reliable antibodies and mechanically well-defined 'erasers' and 'readers'. Here, we systematically identified interacting proteins for all human PRMTs and hope to contribute to arginine methylation field and help the study of related biological processes.

Results: Using a sensitive BioID technology and mass spectrometry, we systematically characterized the interactome and the substrate specificity of all known human PRMTs. The results demonstrated significant overlapping of interactomes of human PRMTs with the known methylarginine-containing proteins. Different PRMTs are functionally redundant with a high degree of overlap in their substrates and high

similarities between their putative methylation motifs.

After bioinformatics analysis and experimental validation, we revealed that RNA-binding proteins (RBPs) involved in regulating RNA splicing and translation are highly enriched in PRMT interactomes and undergo extensive arginine methylation, indicating their importance in regulating RNA metabolism.

Applying RNA-seq and Ribo-seq, we demonstrated that the inhibition of PRMTs leads to global alteration of splicing and translation inhibition. In particular, ribosomal proteins are extensively modified with methylarginine, and mutations in their methylation sites suppress ribosome assembly, translation, and eventually cell growth, indicating arginine methylation of ribosomal proteins is critical to ribosomal assembly.

Conclusions: This study provides new insights into biological functions of PRMTs and links individual PRMTs to their arginine methylation events, revealing critical functions of arginine

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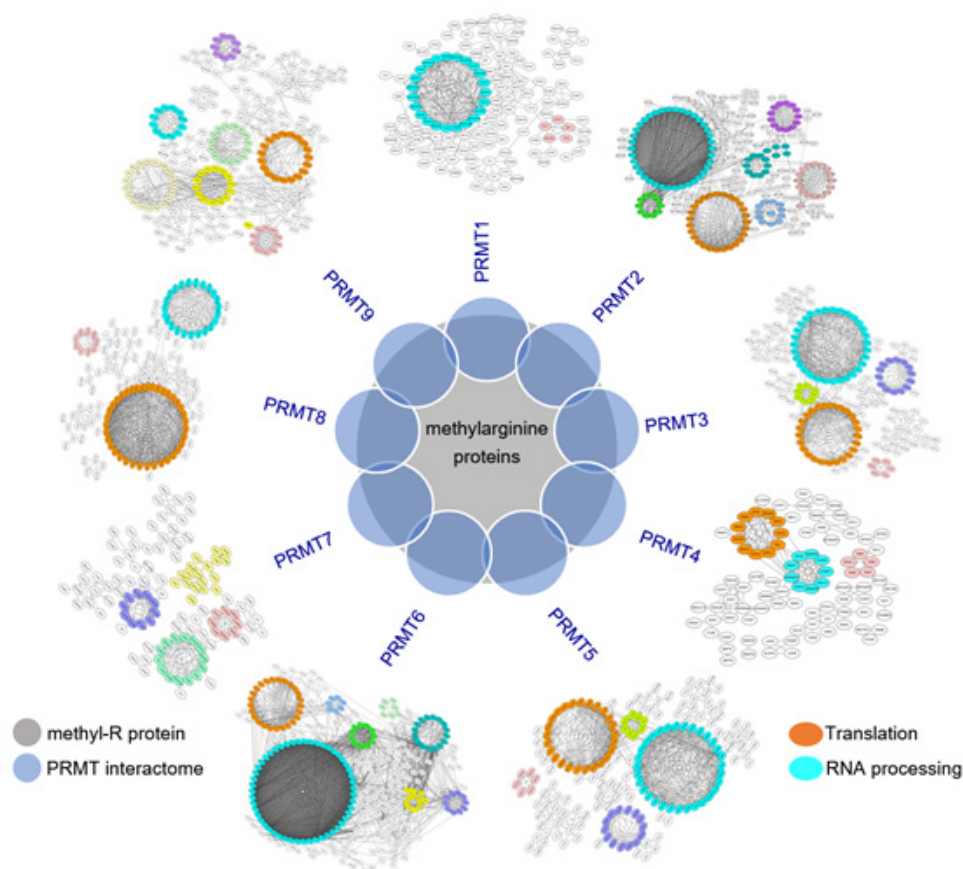
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methylation in regulating RNA splicing and translation. We hope that the new findings and the data analysis methods in this study will be of broad interest to investigators in the fields of protein modification and RNA biology.

Graphical Abstract: Arginine methylation is highly involved in RNA splicing and translation. The putative PRMT substrates were subjected

to protein-protein interaction analysis from the STRING database (v10.5, the minimum required interaction score was set to high confidence at 0.7), the resulting networks were clustered by MCODE in Cytoscape software. The orange nodes indicate functions related to translation and the cyan nodes indicate functional enrichment in RNA processing.



Biography

Dr. Wei, Huan-Huan is an assistant professor at PICB, Shanghai Institute of Nutrition and Health, Chinese Academy of Sciences (CAS). She obtained her Ph.D. degree at South China Institute of Botany, CAS. After graduation, she worked at FuDan University as a lecturer where her research focuses on the molecular mechanisms of macrolidesin inhibiting pancreatic and breast cancers. During 2014-2016, She worked in Zefeng Wang's lab as a visiting scholar in University of North Carolina at Chapel Hill and later she joined Zefeng Wang's group at PICB in 2016. Her recent study interest focuses on the mechanisms and regulation of aberrant alternative splicing in cancers as well as the mechanisms and functions of arginine methylation on RNA splicing factors.

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Hematopoietic stem cell transplantation in thalassemia patients: A Jordanian single centre experience

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Introduction: Beta thalassemia major is the commonest inherited hematological disorder worldwide which needs lifelong sufficient supportive management. Hematopoietic stem Cell transplantation (HSCT) is the only curative treatment available till now.

Aim: To evaluate the outcome of children who underwent allogenic hematopoietic stem Cell transplantation as a curative approach for Thalassemia Major.

Settings: Queen Rania AL- Abdullah children Hospital (QRCH).

Methods: A retrospective review of the medical files was conducted for all children (< 15 years) who had thalassemia major and received HSCT between January, 2010 and January, 2019. The following variables were studied for all patients: age, gender, Pesaro classifications, the count of infused raw bone marrow stem cell (CD34), engraftment time, outcome and complications.

Results: A total of 34 children were transplanted for thalassemia major, at an average of 4 cases per year. All underwent allogenic raw bone marrow transplantation from matched

related donors. Thirteen patients (38.2%) were males and twenty one (61.2%) were females. The age ranged between 2 and 15 years, with a median age of 6.5 years. According to Pesaro classification, 31 patients were class 2 (91.2%) and 3 patients were class 3(8.8%) while no single case met the crieteria for class 1 Pesaro classification. The median CD34 count was 3.5 million /Kg of recipient weight (range, 1.5×10^6 - 7×10^6 /kg). The median time for neutrophil engraftment was 15.5 days. At a median follow up of 5 years (range 1- 9.5), 33 patients were alive. One patient died before 100 days post transplantation due to grade IV acute gastrointestinal Graft Versus Host Disease (GVHD). Three patients had secondary graft failure (8.8%). Six patients (17.5 %) developed mild grade 1-2 skin GVHD while another patient developed hemorrhagic cystitis due to BK virus and cytomegalovirus (CMV) which reactivated simultaneously, and was successfully managed .

Conclusion: The outlook for Thalassemia major has dramatically changed after HSCT, with a considerable success in Jordan and results comparable to international data.

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Coxiella burnetii abortion among domestic animals in Iran

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Background: *Coxiella burnetii* is the causative agent of Q fever which is a highly infectious zoonotic disease. *C. burnetii* has become one of the most important causes of abortion in livestock, which can lead to widespread abortions in these animals. There are very limited studies on the prevalence of *C. burnetii* infection in cases of animal abortion in Iran. The aim of this study was to investigate the occurrence of *C. burnetii* in ruminant abortion samples in Iran.

Methods: Abortion samples from cattle, sheep and goats were collected from different parts of Iran and were tested using Real-time PCR targeting the IS1111 element of *C. burnetii*.

Results: In this study, 36 samples (24.7%) of the 146 collected samples were positive for *C. burnetii*. The prevalence of *C. burnetii* was 21.3% (20 of 94 samples) in sheep samples. Also, 10 of 46 cattle samples (21.7%) were positive. All six goat abortion samples were positive for *C. burnetii*.

Conclusions: The findings of the study demonstrate that *C. burnetii* plays an important role in domestic ruminant abortions in Iran, suggesting that more attention should be paid to the role of *C. burnetii* in domestic animal abortions by veterinary organizations. The risk of transmitting the infection to humans due to abortion of animals should also be considered.

Biography

Dr. Saber Esmaeili is an assistant professor and Researcher in Medical Microbiology at Pasteur Institute of Iran. Her primary research interest is bacterial emerging and re-emerging pathogens, including *Coxiella burnetii*, Bartonella, Francisella, Rickettsia and Yersinia pestis.

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Early detection of Covid-19 by wastewater sampling

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Wastewater-based epidemiology (WBE) is a concept in which wastewater can be utilized as an indicator to understand the presence and scale of infection. WBE can provide an alarming and early indication about the presence of COVID-19 infected individuals in a city, town, and even in a housing complex.

Current data on SARS-CoV-2 and other viruses suggest that wastewater-based epidemiology is a viable addition to the assessment and mitigation of viral outbreaks. The presence of SARS-CoV-2 RNA in wastewater may predict COVID-19 occurrence qualitatively and quantitatively.

Few articles reported a correlation of SARS-CoV-2 RNA concentration in wastewater with the number of COVID-19 cases, whereas few reported higher prediction by wastewater surveillance than confirmed cases. The application of WBE is still in a preliminary stage but has the potential to indicate an early sign of transmission. The commonly adopted disinfection technologies in inactivating SARS-

CoV-2 in municipal and hospital wastewater is required to reduce the risk associated with municipal and hospital wastewater.

Applicability of WBE in terms of detection limit by several PCR-based assays and they observed presence of SARS-CoV-2 in wastewater even when the number of cases per 100,000 was below 1.

Therefore, the monitoring through WBE can provide an early indication of emergence of COVID-19. It was observed 10 out of 66 wastewater samples as positive collected from toilets, showers, and washbasin of quarantined households. 78 collected wastewater samples (74 from polio surveillance sites, 3 from drains of affected area, 1 from drainage of quarantine center) out of which 21 samples were tested positive for the presence of SARSCoV-2 RNA. Above all, WBE has the potential to detect infection within a community ahead of the onset of symptoms in COVID-19 positive individuals and even in case of asymptomatic individuals.

Biography

Associate Professor at Department of Environmental Health Engineering, School of Public Health, Tehran University of Medical Sciences. Over 30 years of research and teaching in BS, MS, PhD courses. Over 100 research project and about 600 published papers.

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Towards prevention of channelopathy based sudden cardiac death and associated disorders in human genetics of sudden cardiac death, the Channelopathies: Today's perspective and the future

Abdullah Abdulrhman Al Abdulgader

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Director of Research and Biocomputing Department, Prince Sultan Cardiac
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Channelopathy constitute significant proportion of SCD worldwide (around 10% or 370000 death annually). Besides LQTS, the channelopathies include Brugada syndrome (BrS), short QT syndrome, Early Repolarization Syndrome (ERS), catecholaminergic polymorphic ventricular tachycardia (CPVT), and congenital sick sinus syndrome. It was constituting a mysterious group of disease until the second half of the last century when Anton Jervell and Fred Lange-Nielsen described Jervell Lange-Nielsen syndrome in 1957. It was late until 1995 where genetic characterization commenced. Later on the massive genetic information obtained in the field with discovery of genetic

heterogeneity and allelic heterogeneity were all part of our new understanding and clues to solve the historical conundrum of channelopathies. In this presentation, we review the genetic basis of sudden cardiac death with a focus on the current knowledge on the genetics of the primary electric disorders caused primarily by mutations in genes encoding ion channels. Diving deep into the genetic details of those syndromes enable us to improve our knowledge and decode the pathophysiology of those malignant arrhythmias. The ultimate ambition is prevention of channelopathy based sudden cardiac death and associated disorders in human.

Biography

Professor Abdullah Alabdulgader, MD, DCH(I), DCH(Edinb), MRCP(UK), ABP, FRCP(UK) was born in Al-Khobar and raised in Al-Hasa, in the eastern part of Saudi Arabia. Al-Hasa is in the middle of ancient wisdom with cultural and religious sobriety, while being embraced in marvellous harmony with the gigantic oil industry. His genetic lineage extends to the Al-Ansar tribe where, over 40 generations ago, Abu Ayub Alansari was one of the elite partners of prophet Muhammad. Professor Alabdulgader graduated from the college of medicine and medical sciences, King Faisal University, in 1991. Immediately, after graduation, he was involved in extensive medical training, cascaded at different levels of specialties, until 1997 where he was certified with five medical degrees. This qualified him to double major specialty in paediatrics and adolescent medicine and subspecialty in paediatric cardiology with awards from Saudi Arabia, Ireland and the United Kingdom. He excelled to achieve a record achievement in becoming a member of the Royal Colleges of Physicians (UK), having completed all examinations and requirements in just 12 months and becoming an MRCP(UK) holder at the age of 27. Soon afterward he established his first foundation for congenital heart services in eastern Saudi Arabia. In addition to optimizing the organization of clinical services, research was one of his paramount priorities. Professor Alabdulgader has long been fascinated by the epidemiology of cardiac dysmorphology in humans. He initiated examination of the incidence and demographic characteristics for congenital heart disease for the first time in his part of the world. This scientific step heralded the onset of one of the major scientific projects in human history – concerned with discovering the environmental and genetic risk factors of congenital heart diseases in an attempt to discover the mysterious secrets of human heart dysmorphogenesis, with the ultimate aim of overcoming the disease in human species. In 2001, Professor Alabdulgader was granted a special governmental scholarship to further sub-specialize in cardiac electrophysiology and electrical rhythm devices. This

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study was undertaken in Edmonton, Alberta, Canada. During this time, he was able to describe, for the first time in medical literature, unique congenital anomalies, in native Canadian new-borns, from Calgary University hospital.

He is well known for founding the Prince Sultan Cardiac Center, in Al-Hasa, Saudi Arabia (PSCCH) after a generous donation from the late crown prince of the country HRH Prince Sultan bin Abdulaziz. PSCCH, today, is one of the leading tertiary care cardiac centers in the middle east and the world.

Professor Alabdulgader's holistic universal scope in science and the universe led him to establish the reputable King of Organs Congress for Advanced Cardiac Sciences, where the wisdom dictates perceiving the human heart as a souvenir of the soul and a cradle of the mind and wisdom, with extensive and delicate symphony resonating to higher energetic levels of collective consciousness.

Critical conceptual faith and reasoning behind the King of Organs establishment was to rescue humanity from the historical myths with absent scientific insight, such as the great cholesterol myth.

Professor Alabdulgader, as the congress founder and president, and the late professor Paul Rosch, as his congress deputy, devoted a full day of scientific debate to expose the cholesterol myth in four 12 consecutive international conferences (2008, 2010, 2012 and 2019).

In other work, Professor Alabdulgader collaborated with HeartMath Institute, California, USA, where he was able to establish a special detection system to record the planetary Schumann frequencies. He was awarded the world gold medal from WOSCO (Great Britain-2012) for establishing unique direction in astrobiology and cardiac sciences exploring the human heart rate variability orchestration with Schumann resonances and solar winds. In the same year he was awarded the Diploma of honour from the International Committee on geological and environmental change (GEOCHANGE), Munich, Germany.

In 2018, he led a scientific team from HeartMath Institute, NASA, along with a reputable European scientist, in the longest human record synchronizing human heart rate variability with Schumann resonances, solar winds and cosmic rays. This achievement was published in Nature scientific reports in February 2018.

Nowadays, Professor Alabdulgader is leading a number of international projects concerned with investigating the role of the very low frequency band of the heart rate variability in inflammation and systemic hypertension to treat systemic hypertension without medications. The Saudi Homocysteine Atherosclerosis and Cancer Trial (SAHACT) utilizes cellular pathways with simple nutrients to combat atherosclerosis and cancer in human, and other projects. In the clinical arena he is a senior interventional congenital cardiologist and electrophysiologist performing ablation interventions with radiofrequency as well as cryoablation technologies utilizing cardiac electrical mapping to cure cardiac arrhythmias.

Professor Alabdulgader is a scientific board member and editorial board member of many international organizations and journals in the USA, UK, Germany, Switzerland, China, India and other countries. He has received many acknowledging letters and honouring events and gifts from King Salman, Princes, and world authorities. At the moment, he is the senior scientist and chief physician in PSCCH and the leader of the research and biostatistics services, preparing for the next King of Organs congress with higher consciousness for the better future of humankind.

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Metal doped BiOI based photocatalyst for the degradation of antibiotics and bacteria

Neetu Talreja

Advance Ceramics and Nanotechnology Laboratory, Department of Materials Engineering, University of Concepcion, Chile

Tetracycline (TC) is one of the most commonly used broad-spectrum antibiotics to treat bacterial infection. TC antibiotics enter into the environment because of partial metabolism in humans and animals, thereby increasing environmental toxicity. Therefore, it is highly needed to treat TC antibiotics from the water system. In this aspect, the present work focus on the synthesis of metals incorporated bismuth-oxy-iodide (M-BiOI) based photocatalyst materials by varying metal and amount of metals. **Figure. 1** shows the schematic representation of the M-BiOI based photocatalyst material. The

incorporation of the metals within the BiOI aided advantages that decrease the band gap value. Interestingly, incorporation of the metals within the BiOI increases the oxygen defects, thereby high photo-degradation ability. The prepared M-BiOI based photocatalyst efficiently degrade antibiotics from water. The photocatalytic activity against bacteria of the M-BiOI was also determined. The data suggested that the prepared M-BiOI based photocatalyst materials efficiently inhibit bacterial strains. Therefore, the prepared M-BiOI based photocatalyst materials shows potential ability for efficient degradation of antibiotics compounds as well as bacteria.

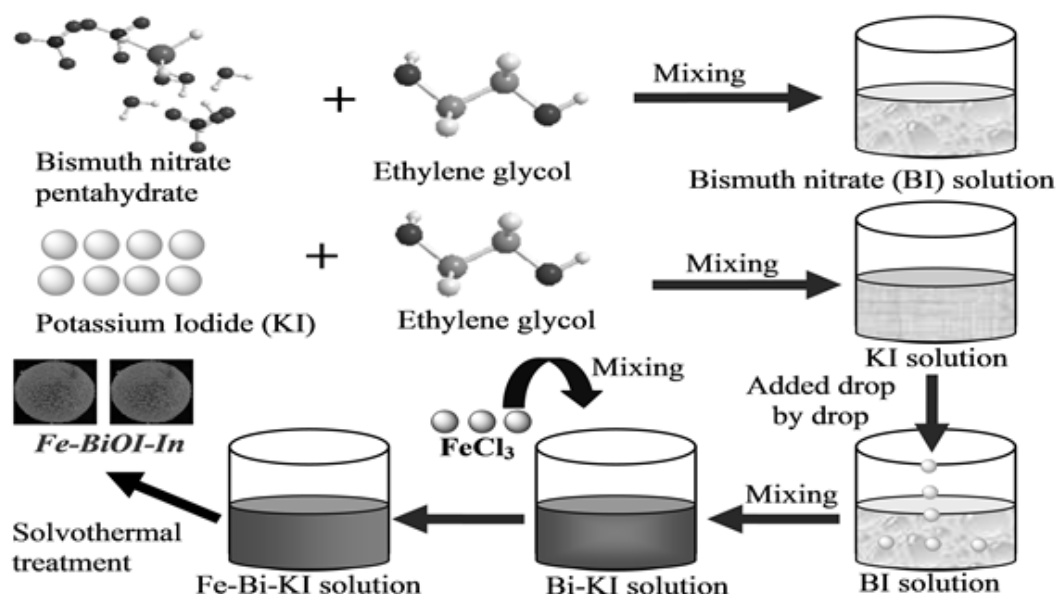


Figure. 1 Schematically representation of the M-BiOI based photocatalyst material.

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Biography

Dr. Neetu Talreja is working as a Researcher at, Department of Materials Engineering, Faculty of Engineering, University of Concepcion, Concepcion 4070409, Chile. She has completed Ph.D. in Chemistry from the collaboration of the Indian Institute of Technology, Kanpur, India, and Banasthali University, Banasthali, India. Before joined the University of Concepcion, Concepcion, Chile, She worked as a Researcher at the University of La Serena, Chile, Gachon University, South Korea, and Department of Chemical Engineering, Beijing University of Chemical Technology, Beijing, China.

Dr. Neetu's research focuses mainly on interdisciplinary science involving nanomaterials and chemical sciences such as synthesis, characterization of nanomaterials mainly two-dimensional nanomaterials, and polymeric composite-based materials for energy and environmental applications. The leading field of science that is relevant to her area of interest consists of nanotechnology, nano-bioscience, energy, and environmental remediation applications of polymeric composite/nanotechnology. Dr. Neetu has wide experience of handling various characterization tools such as scanning electron microscopy, transmission electron microscopy, x-ray photoelectron spectroscopy, Zeta-sizer to investigate zeta potentials, and particle size/agglomeration behavior of nanoparticles/carbon-based materials in liquid media, thermo-gravimetric analysis, x-ray diffraction (XRD), surface area analyzer, Fourier transformed spectroscopy and atomic field microscopy (AFM) for the characterization of different materials.

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Management of public and environmental health using probable engineered protocols to control the airborne transmission of viral-cum-atmospheric pollutants

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²School of Bioscience, Indian Institute of Technology Kharagpur, India

The last few decades have shown that public health is directly associated with environmental health. Environmental fitness depends on the rate of atmospheric revival. Air pollution including particulate and gaseous emission is one of the primary causes of several human health hazards, thus hindering the sustainability and biodiversity of our mother planet. The polluted air pathway can be even

more dangerous medium for the transmission of several deadly and infectious health syndromes. Presently the entire world is suffering from the global fever of novel coronavirus. There are huge scientific evidences till date, which proves that such novel virus or virus of its kind can easily spread through several indoor and outdoor atmospheric routes in form of the aerosol molecule. Moreover, it is quite essential to

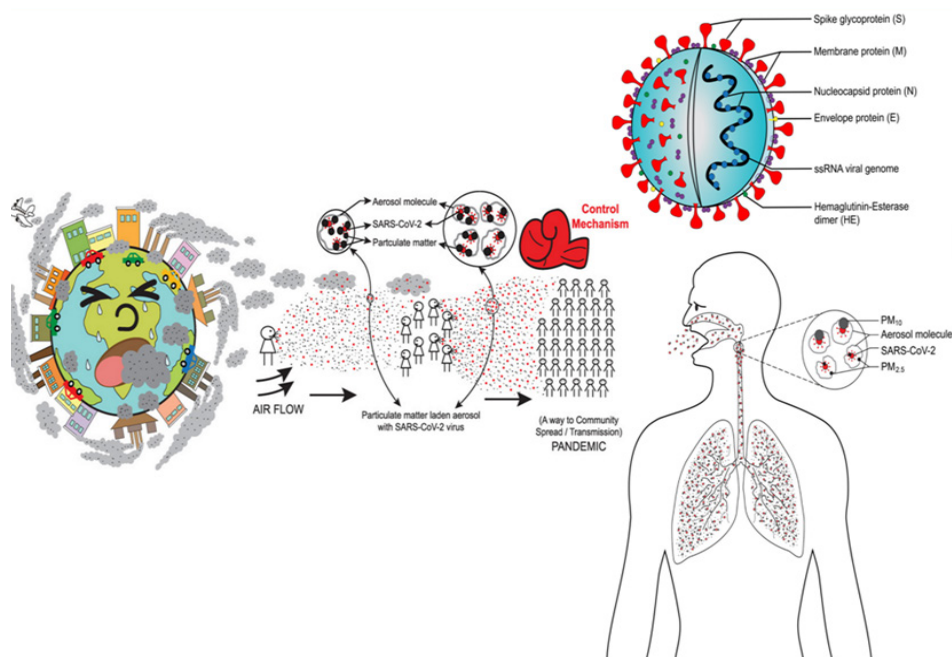


Figure: Pictorial view of airborne pollutants and viral transmission through air pathway thus affecting the long term human health, environment or ecology associated to the global health of the mother planet

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demarcate the sources and root causes of such atmospheric hazards, leading to potential threats in form of such emerging unknown airborne disease transmission. The research societies have already made us aware of the combined effects of such biochemical hazards leading to casualties. This might lead to chronic as well as acute health syndrome, thus unbalancing the equilibrium of several life forms and our ecology. Prolonged exposure to such airborne virus adhered to air particulates might impose severe alert even during the post-pandemic situation. So it is high time to deal with the feasible preventive measures over hazardous

air pollution and associated atmospheric viral transfer. Some of the best possible and available chemical engineered processes like the scrubbing technologies in the wet and dry state can operate efficiently with an associated low-cost disinfection technology to combat the global problem. Such green-engineered-technologies will work quite efficiently even during the pre, post-pandemic situation for complete removal of target materials. These possible suggestions help in proper environmental surveillance thus monitoring the further spread of air pollutants and biohazards globally.

Biography

Subhrajit Mukherjee is presently working as a Doctoral Research Scholar (SRF) at the Environmental or Industrial Pollution Control Laboratory at the Department of Chemical Engineering in IIT Kharagpur. He has previously completed his M. Tech. from the same department at the multi-phase fluid flow laboratory in IIT Kharagpur, where he was mainly involved in the specific research related to process intensification and two-phase flow in millichannels. His present research is mainly associated with air pollution control cum environmental health, management of hazardous materials, advancement in scrubbing technologies, recycling-cum-reutilization of wastes at low cost, etc. He has published several remarkable research outputs in form of conference papers as well as peer-reviewed journals in the above specific fields. He acts as a life member and life associate member of prestigious academic bodies like the Indian Institute of Chemical Engineers (IICHE), International Environment Forum (IEF), Institution of Engineers (IEI), International Association of Engineers (IAEng), and many more.

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Nitric oxide as a noble drug for the treatment of COVID

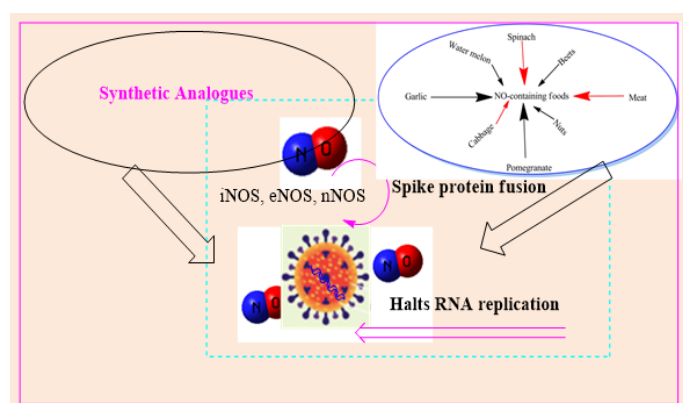
J. M. Mir

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In the prevailing coronavirus disease-2019 (COVID) times, scientists are eager to develop vaccine against COVID-19, and careful measures are being taken to develop an effective drug. Meanwhile, several antiviral compounds have been repurposed for the COVID-19 treatment, and drug repurposing has yielded satisfactory results. In the meantime, NO is also under clinical trials to find its potentiality as anticoronavirus. This work aims to describe the therapeutic potential of nitric oxide (NO) for the treatment of deadly (COVID-19). As, the cytokine storm has been mainly found concerned with the uncontrolled deaths in the COVID-19 apocalyptic times. The co-morbid deaths along with other fatalities have urged medicinal researchers to seek for emergency drugs/medicines to fight this dreadful disease. Nitric oxide therapy is one of the prominent therapies being eyed as the efficient option for treating coronavirus infected persons. Therefore, keeping in view the natural

involvement of NO in immune system, antiviral (anticoronaviral in special) implications and the significance of NO in mitigating the COVID-19 associated symptomatic complications, this work addresses the noble treatment of nCOVID using NO as a drug. So, the profound antiviral effects of NO against coronavirus, and also the role it plays in relieving symptomatic severity of COVID-19 are supportive of the fact to declare NO as a therapeutic option for this disease.



Biography

Dr Jan Mohammad Mir is currently working as an Asst. Professor at the Islamic University of Science and technology, Awantipora-J&K. He bagged his Ph.D. from R.D. University, Jabalpur in 2015 and is about to complete his D.Sc. degree from the same university. His postdoctoral research mainly involves the molecular modeling and medicinal implications of metal based gasotransmitters. Currently, he is seeking the role of NO, CO and H₂S in minimizing the COVID-19 associated severity. He has been a good academician and a researcher. He guided so many research projects entailed with M.Phil. and M.Sc. students. As a young researcher his scientific contributions have got more than 400 citations till now. As per the available details, he has published more than fifty research papers of current scientific temper in various reputed journals covering most of the world famous publishers. He has compiled more than seven books and several book chapters till now. Dr Mir is currently serving as editor as well as reviewer for several esteemed journals.

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Usutu Virus potential vectors and their diversity in Iran: A neglected emerging Arbovirus

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Introduction: Usutu Virus (USUV) is a vector-borne flavivirus within the family of Flaviviridae; its reservoirs and vectors are birds and mosquitoes, respectively.

Methods: At first, electronic databases were searched with a date range from 2000 to 2018 to find the Culex species that transmit the disease and then for determining the diversity of those, mosquito larvae were collected from six places in three main environmental categories using the dipping technique.

Results: In total, 1369 specimens belonging to 10 different species were collected and identified, as follows: *Cx. hortensis* Ficalbi, *Cx. laticinctus* Edwards, *Cx. mimeticus* Noe, *Cx. perxigus* Theobald, *Cx. pipiens* Linnaeus, *Cx. modestus* Ficalbi, *Cx. sinaiticus* Kirkpatrick,

Cx. theileri Theobald, *Cx. torrentium* Martini and *Cx. tritaeniorhynchus* Giles. Four species involved as vectors of USUV in other countries are printed in bold. *Cx. pipiens*, as the main vector was the most frequent species in rural areas, share its larval habitats with *Cx. torrentium* (similarity > 0.9) and reached its peak in August. Overall, in the present study, there was a significant positive relationship between mean temperatures and abundance of mosquitoes ($r = 0.75$, $P = 0.005$).

Conclusion: In the present study, some species involved as main vectors of USUV in other countries and their ecological features were recorded. Based on these results, the possibility of the emergence of USUV in Iran exists.

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Self- Care practices and associated factors among adult diabetic patients in public hospitals of Dire Dawa city administration, Eastern Ethiopia

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Background: Diabetes is a huge growing problem, and causes high and escalating costs to the society. Self-care practice for adults with diabetes is not well addressed in sub-Saharan Africa including Ethiopia. To prevent serious morbidity and mortality, diabetes treatment requires commitment to demanding self-care practice. The aim of this study was to assess self-care practices and its associated factors among adults with diabetes in Dire Dawa public hospitals of Eastern Ethiopia.

Methods: Cross-sectional study was conducted among 513 adults with diabetes. The study participants were selected through systematic random sampling. Data was collected from February 1st to March 1st, 2018. Patients were interviewed using a structured questionnaire. Data were entered into Epi-data version 3.3.1 and exported to SPSS version 22.0 for analysis. Bivariable and multivariable logistic regression with crude and adjusted odds ratios along with the 95% confidence interval was computed and interpreted accordingly. A P-value of <0.05 was considered to declare a result as statistically significant.

Result: The result of the study showed that 55.9 %, (95% CI: 51.4, 60.3) of participants

had good self-care practices. Good self-care practice was associated with having family support, treatment satisfaction, diabetes education, having glucometer, higher educational status, duration of the disease, high economic status and having good knowledge. There were statistical association between good diabetes knowledge (AOR= 2.14 , 95% CI :1.37, 3.35), family support system (AOR= 2.69, 95% CI:1.56, 4.62), treatment satisfaction (AOR= 2.07, 95% CI:1.18, 3.62), diabetes education (AOR= 2.21, 95% CI: 1.35, 3.63), high economic status (AOR= 1.89, 95% CI: 1.01, 3.48), having glucometer,(AOR=2.69, 95% CI:1.57, 4.63), higher educational status (AOR= 2.68 , 95% CI: 1.31, 5.49), and duration of disease greater than 10 years AOR=2.70, 95% CI: 1.17, 6.26) with good self-care practice.

Conclusion: In this study a substantial number of the patients had poor self-care practices especially dietary practice and self-monitoring of blood glucose which have critical roles in controlling diabetes. Provision of diabetes self-care education and counseling especially on importance of self-monitoring of blood glucose, and dietary practice should be considered by responsible bodies.



Meningitis as an initial presentation of COVID-19: A case report

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²University of Health and Sciences, Pakistan

Novel coronavirus (SARS-CoV-2) emerged in Wuhan, China, and it most commonly presents with respiratory symptoms ranging from cough, low-grade fever to severe pneumonia. Neurological complications of COVID-19 remain largely unfamiliar and sometimes the unique initial presenting complaint of COVID-19. We reported the first unique presentation of SARS—CoV-2 virus in a 21-years-old medical student, who presented with initial signs and symptoms of meningitis and later on developed respiratory symptoms on the second day of admission.

An extensive work-up was done to evaluate the cause of meningitis, the results of which were unremarkable (Table 1). As per hospital protocol and based on respiratory symptoms, a nasopharyngeal swab for SARS-CoV-2 was sent, the result of which came out positive. He was labeled as a case of meningitis secondary to probably SARS-CoV-2 infection, as no other causative factor was found. His condition deteriorated and unfortunately, he died because of multi-organ failure.

Conclusion: The SARS-CoV-2 virus can cause neurological manifestations by various

Test	Result
Appearance	Clear with no xanthochromia
Lactate dehydrogenase	48 U/L
Glucose	83 mg/dL
Protein	164 mg/dL
RBCs	05
Lymphocytes	90%
Neutrophils	10%
Gram stain/Ziehl-Neelson stain	No microorganism seen
HSV-PCR	Negative
VZV-PCR	Negative
Culture	No growth after 48 hour of incubation

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proposed mechanisms. It can spread to the brain directly through angiotensin-converting enzyme receptors 2 or it can affect the brain through hematogenous spread or neuronal pathway. As these neurological manifestations are fatal, a physician should keep in mind

all these manifestations, while encountering patients, especially during this pandemic. Early diagnosis can have a good outcome for the patients as well as we can prevent the vertical spread of this virus by taking precautionary measures.

Biography

Muhammad Hanif is an international medical graduate from Pakistan. He is currently working as an internal medicine resident at Hayatabad Medical complex, Peshawar, Pakistan. He is ECFMG certified.



Ameliorative effects of African walnut on nicotine-induced reproductive toxicity in rat model

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³Department of General Outpatient, District Hospital Awgu, Nigeria

Objective: Walnuts are widely consumed nut by men in Nigeria and it has been connected to improving male reproductive health. This study evaluated the effect of African walnut on sperm parameters and testicular architecture of nicotine (NIC)-induced reproductive toxicity in male Wistar rats.

Methods: Wistar rats were randomly assigned into four groups, that is, GN0 (1 ml/day normal saline and normal rat chow), GN1 (1 ml/day NIC and normal rat chow), and GN1W6 and GN1W12 (1 ml/day of NIC daily fed with 6% and 12% walnut-rich feed), respectively. This continued for 28 days. The animals were euthanized and their sperm was collected and its parameters were analyzed. The testis was harvested and prepared for histological examination.

Results: NIC significantly reduced sperm motility ($P = 0.0006$) and sperm count ($P =$

0.0001), induced mild apoptosis of Leydig cells and caused moderate spermatogenic arrest in GN1. However, walnut-supplemented diet significantly increased the NIC-induced reduction in sperm motility ($P = 0.04$) and sperm count ($P = 0.0001$) and its consumption was effective in attenuating testicular damage caused by NIC administration in GN1W6 and GN1W12.

Sperm parameters (Mean \pm SD) of the positive control, negative control, 6% Walnut and 12% Walnut respectively.

Conclusion: African walnut could exert therapeutic effect in the reduction of the adverse effect of NIC on the sperm motility, sperm count, and testicular architecture. It is worthwhile to consider it as a useful and affordable supplement to be added to the diet of males with infertility problems.

Group Parameters	GN ₀ Mean \pm SD	GN ₁ Mean \pm SD	GN ₁ W ₆ Mean \pm SD	GN ₁ W ₁₂ Mean \pm SD
Motility (%)	78.3 \pm 7.6	*55.0 \pm 8.7	*70.0 \pm 13.2	*68.3 \pm 10.4
Count (Million/ml)	78.7 \pm 7.8	49.0 \pm 1.7	73.3 \pm 6.7	81.3 \pm 4.5
Morphology (%)	90.0 \pm 2.0	89.3 \pm 1.5	91.0 \pm 2.6	89.3 \pm 1.5

Data presented in % \pm SD, T-test statistics

* represents significance difference as compared with control group ($p < 0.05$)

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Biography

David C. Ikwuka Ph.D is a leading researcher in Biomedicine known for his leadership skills and research potential. He is currently a Faculty member in the Department of Physiology, Nnamdi Azikiwe University, Nnewi Campus, Nigeria where he teaches and mentors research of medical and paramedical students in Physiology, and is currently pursuing a Ph.D in Physiology at the Department of Physiology, University of Nigeria Enugu Campus, Nigeria. His research interest includes Reproductive Physiology, Blood Physiology, Immunology and Environmental Physiology. He has authored several publications, invited and peer-reviewed several manuscripts for high impacted Journals and seats as editorial board member for a few Journals.

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Photobiomodulation reduces pain in patients with shoulder Tendinopathy

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Objectives: Summary and discussion of a systematic review and meta-analysis on efficacy of low-level laser therapy (LLLT) for shoulder tendinopathy.

Results: Positive effects reported in 11 of 17 (73%) studies. Six studies reported no significant effects but 4 were found to have inadequate dosage. Eleven of 15 studies addressing pain relief favored LLLT over no treatment, placebo, or other modalities. When only studies with adequate dosage based on World Association for Photobiomodulation Therapy (WALT) recommendations were used, 10 of 11 (90%) studies reported significant pain reduction.

Discussion: Photobiomodulation (PBM) therapy entails the therapeutic use of light energy to affect photophysical and photochemical mechanisms of endogenous chromophores. LLLT is one form of PBM used to inhibit pain and inflammation or stimulate wound healing and tissue regeneration. PBM therapy can be

used as a monotherapy or as an adjunct with other interventions to reduce pain associated with shoulder tendinopathies. To obtain optimal outcomes, clinicians must provide adequate dosage energy in joules (J) to the tissue. Distance to the target tissue, pigmentation, makeup of tissue content, and size of the total tissue area (cm²) treated affects dosing. Dosage is related to the wavelength of light, number of diodes for each energy source, irradiation area point size (cm²) of the aperture, and the calibration of the PBM device. Power output is affected by the peak power (W), pulse rate or frequency (Hz), pulse width (s), and duty cycle (%) while energy (J) is affected by power (W) multiplied by treatment time (s). Dosage should be based on WALT minimum recommendations of an energy density of 2 to 4 J/cm² or 2 to 8 J of total energy.

Conclusion: PBM can be an effective tool for treating shoulder tendinopathies if clinicians understand tissue considerations, unit settings, and follow WALT recommended dosage guidelines.

Biography

Kristen (Kris) Agenais a faculty member in the Health Promotion and Exercise Science department and athletic trainer at Luther College in Decorah, Iowa, USA. She completed a Bachelor of Arts degree in Biology at Simpson College in 1995, a Master of Science degree in Exercise Science at the University of Iowa in 1997 and is set to complete the Doctor of Athletic Training degree from A.T. Still University in June 2021. Kris holds certifications as a BOC Certified Athletic Trainer (ATC), NSCA Certified Strength and Conditioning Specialist (CSCS), NASM Corrective Exercise Specialist (CES), as well as FMS Functional Movement Screen Level-2 (FMS-2) and Functional Capacity Screen (FCS) certifications. She is a member of the National Athletic Trainers' Association and National Strength and Conditioning Association, an American Red Cross First Aid, CPR and AED Instructor and is a recipient of the American Red Cross National Lifesaving Award of Merit.

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Decentralized clinical trial case study: A five-stage process for recruiting and completing a site-less clinical study in less time and lower cost than traditional methods

Alex Hilderbrand and Mark Stins
83bar Inc., USA



The entire healthcare system has been thrust towards a more virtual delivery model, including site-less virtual clinical trial recruitment. In this case study, a five-stage process is illustrated in which a 1,000-patient virtual clinical trial was completed in just seven months, and at a cost which was 30% lower than traditional site-

based recruitment. Participants were located, educated and navigated through a successful multi-step virtual clinical trial for an at-home colon screening test. Overall, the trial achieved a timeline from the first participant to final analysis in about six months, followed by dataset review and analysis completed in just 5 days.

Biography

Alex Hilderbrand is Vice President of Patient Activation at 83bar, Inc. He is a senior marketing strategist for clinical trials, diagnostics, and medical devices. He has helped shape demand generation, patient navigation, engagement and retention capabilities into campaigns that generate ROI and accelerate patient recruitment.

Mark Stinson is Vice President at 83bar Inc. His work includes market research, customer journeys, product branding, and marketing strategy for health, science, and technology products. He is the author of healthcare business books and published journal articles. Mark has been included in the PharmaVoice 100 Most Inspiring People in the Life-Sciences Industry.



Post COVID-19 MSSA pneumonia

**L. Didenko^{2,3}, B. Chaudhry¹, K. Alekseyev²,
A. Malek³ and G. Ryklin¹**

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²Post Acute Medical Rehabilitation Hospital of Dover, USA

³American University of Antigua, USA

Abstract should give clear indication of the objectives, scope, results, methods used, and conclusion of your work. One figure and one table can be included in your results and discussions. Coronavirus disease 2019 (COVID-19) was first identified at the hand of 2019 has a cluster of pneumonia cases in Wuhan, China. By February 2020, the virus quickly spread, becoming a global pandemic. The spectrum of a symptomatic infection severity can range from mild, severe, and critical disease. Many correlated comorbidities were established, including smoking, socioeconomic background, gender (Male prevalence), hypertension, obesity, cardiovascular disease, chronic lung disease, diabetes mellitus, cancer, and chronic kidney disease. In an extensive literature search, post-COVID-19 housing staphylococcus aureus

pneumonia with pneumothorax has not been recorded. We present a case about a 62-year-old male who presented with symptoms of COVID-19 with many underlying comorbidities, including hypertension and hyperlipidemia. He was on ventilator support during his first week in the hospital and then received supplemental oxygenation as he recovered from his COVID-19 pneumonia. Nearly a month and a half after his initial presentation he quickly decompensated and was started on supplemental oxygen and necessary treatments. It was then, with aid of lab work and imaging, we determined that he had developed necrotizing Staphylococcus aureus pneumonia with pneumothorax. He was adequately treated, and once he was stable, he was discharged home and was told to continue his therapy.

Biography

Lidiya Didenko is a fourth-year Global MD medical student from the American University of Antigua and is pursuing a career in Physical Medicine & Rehabilitation. She is currently completing the Core Clerkship Program at Florida International University Herbert Wertheim College of Medicine. She is fluent in three languages, English, Spanish, and Russian.

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Reward preferences of the youngest generation: Attracting, recruiting, and retaining generation Z into public sector organizations

Nana Amma Acheampong

University of Maryland Global Campus, USA

One of the key management lessons of the health and economic impact of COVID-19 pandemic is that agility is a critical success factor for organizations in a pandemic and post pandemic business environment. Organizations recognize that in this rapidly changing technology environment, the desire to be more competitive and increase profit margins has accelerated the need to attract, recruit, and retain a nimbler, more flexible, more adaptive, and digital-centric generational workforce. The heightened search for the 21st Century workforce has led to business leaders, Human resource managers, and talent management professionals to focus on Generation Z. Gen Z is the youngest and newest entrants into the workforce. However, the confusion about their characteristics, work values, and reward preferences hinders efforts to attract, recruit, and retain this generational

cohort into public sector organizations. Accordingly, this study investigates effective reward strategies for attracting, recruiting, and retaining the youngest generational workforce into public sector organizations. I used evidence-based research approach and aggregative systematic review as the study methodology. The evidence curated from 32 studies reveals gender to be a moderating factor for how important specific work values are to Generation Z. The preponderance of evidence shows the intrinsic and extrinsic rewards preferences of Gen Z are reliable predictors of their attraction to, and retention by public sector organizations. Additionally, effective management of person-organization fit and adaptive organizational culture emerge as substantial mediating factors for attracting, recruiting, and retaining members of the Generation Z cohort.

Biography

Nana Amma Acheampong is an educator who currently works as a Management consultant for MKU4 Express Courier & Logistics. After receiving the first part of her tertiary education in Ghana, West Africa, Mrs. Acheampong worked as an Administrative Liaison Officer at the Office of the President, Ghana. Also, she managed administrative and communications affairs for the Economic Community of West African States' (ECOWAS) offices in Guinea Bissau and Cote D'Ivoire. In 2019, Mrs. Acheampong graduated from the University of Maryland Global Campus with a doctorate degree in Business Administration. She aims to pursue a social entrepreneurship path by providing consulting services in markets where legislative frameworks and regulatory guidelines for equal opportunity employment is lacking. From 2018 to present, Nana Acheampong has contributed, in an advisory capacity role to Rural Heights Foundation (a non-profit in Ghana, West Africa) as an advisor to Rural Heights Teacher Capacity Development Program (iTeach).



COPD context-aware healthcare systems

Hamid Mcheick

University of Quebec at Chicoutimi, Canada

The separation of concerns as a conceptual paradigm aims to manage the complexity of the software systems by dividing them into different concerns and aspects. The benefits of this paradigm such as adaptability, reusability and maintenance, have been key drivers of its adoption and usability, particularly in healthcare systems. Developing a system with adaptive, flexible and maintainable architecture requires modularity because we must be able to design a flexible system that allows us to make decisions based on context of patients. In the emerging healthcare

architectures, the fundamental characteristic of healthcare applications is their ability to adapt or to react according to the information of the patient' context. In this talk, I will describe briefly three adaptation approaches, such as i) static (Aspect-oriented Programming), ii) Configuration (Spring), and iii) dynamic composition (OSGi) and parameters (MAPE). Then, I will illustrate dynamic approach to support adaptability of COPD diseases. In addition, I will give an overview and results of our context-aware healthcare systems.

Biography

Dr. Hamid Mcheick is a full professor in Computer Science department at the University of Québec at Chicoutimi, Canada. He has more than 20 years of experience in both academic and industrial area. He has done his PhD in Software Engineering and Distributed System in the University of Montreal, Canada. He is working on design and adaptation of distributed and smart software applications. He has supervised many post-doctorate, PhD, master and bachelor students. He has nine book chapters, more than 50 research papers in international journals and more than 130 research papers in international/national conference and workshop proceedings in his credit. Dr. Mcheick has given many keynote speeches and tutorials in his research area, particularly in Healthcare systems, Pervasive and Ubiquitous computing, Distributed Middleware Architectures, Software Connectors, Service Oriented Computing, Internet of Things (IoT), Mobile Edge Computing, Fog Computing, and Cloud Computing. Dr. Mcheick has gotten many grants from governments, industrials and academics. He is a chief in editor, chair, co-chair, reviewer, member in many organizations (such as IEEE, ACM, Springer, Elsevier, Inderscience) around the world.

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Extracellular Vesicles (EVs) and Chagas disease: Trypanosoma cruzi releases different types of extracellular vesicles that distinctly modulate host immune system

Ana Claudia Torrecilhas², Yiaft Ofir- Birin¹, Sergio Schenkman² and Neta Regev-Rudzki¹

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Extracellular Vesicles (EV) released by infective forms of *Trypanosoma cruzi*, the agent of Chagas' disease, modulate inflammatory response of macrophages through the activation of Toll 2 receptor (TLR2) via mitogen-activated protein kinase pathway. This induces the production of nitric oxide (NO) and expression of the cytokines TNF- α , IL-12 and IL-6, which could explain the inflammation observed in experimental Chagas' disease, and eventually in the progression of human disease. EVs released by the parasite are heterogeneous and it is unknown which factor, or factors present in the different vesicle populations act during the interaction with host cells. Objectives. The goal of the present work was to characterize and isolate the different populations of EVs released by *T. cruzi* and test their effects on macrophages. Methods. EV released by trypomastigotes forms of *T. cruzi* (Y strain) were purified by Asymmetric flow field-flow fractionation (AF4) and characterized by Nanoparticles tracking analysis (NTA). The different populations of EVs were incubated with host human monocytes cells (THP-1) and cytokines production determined by ELISA and

qPCR. The different EV populations were also incubated with LLCMK-2 epithelial cells and the infection by *T. cruzi* determined. Results. We found two distinct populations of EVs. A population with 50 to 50 nm (EV1) and another with 100 to 120 nm (EV2). EV1 induced more TNF- α , IL-6, IP-10 and CCL20 than EV2. It was also more effective in promoting *T. cruzi* infection in epithelial cells. Conclusion. *T. cruzi* released two EV populations that affects differently host cells. Identification of these EVs composition might help to better understand the role of EVs in the modulation of *T. cruzi* infection.



Image 1: Trypomastigote forms release EVs

Biography

Ana Claudia Torrecilhas Associate Professor from the Department of Biological Sciences, UNIFESP, is leading a lab focused on biology of *Trypanosoma cruzi*– the Chagas Disease parasite. My research concerns interaction parasite host interaction by secretion of extracellular vesicles and modulate host immune system. This is a new area of Chagas Disease research and only little is currently known about the precise mechanisms of parasite-derived extracellular vesicle cargo delivery and function. This research will lead to important advances in our fight against it as well as to the interesting findings at the field of cell-cell communication and pathogen-host interaction.

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“ **Designing preventive care bundles for pediatric primary care dental clinics** ”

William J. Riley, Megan A. Phillips, Kailey Love and Mary Saxon

Arizona State University, USA

Introduction: In this study, we design and analyze two oral health bundles as one method for oral health value-based payment. A care bundle is a set of evidence-based practices that have been demonstrated to improve outcomes when performed collectively and reliably.

Bundle Design: Based on stakeholder recommendations, we designed and analyzed two care bundles: 1) Child Comprehensive Examination and Preventive Care Bundle, and 2) Child Periodic Examination and Preventive Care Bundle.

Methods: This analysis includes 19,824 pediatric dental visits from 5/1/19 to 12/22/20. For each Comprehensive and Periodic Examination, we analyzed the visit to determine how many bundle items (radiographs, fluoride, and prophylaxis) were included during that same visit.

Results: For the Comprehensive Examination Bundle, there were 2,081 comprehensive care

examinations, with a median completion rate of 61%. A failure mode analysis demonstrated the following item completion rates: prophylaxis (87%), fluoride (82%), and radiographs (74%). For the Periodic Examination Bundle, there were 17,743 periodic examinations, with a median completion rate of 56%. A failure mode analysis demonstrated the following item completion rates: prophylaxis (100%), fluoride (95%), and radiographs (59%).

Codes were also implemented to document the reasons for incomplete bundle items. For each exam with a missing bundle item, the reason for the incomplete item was recorded and is shown as a percentage of exams missing the respective bundle item.

Conclusions: Oral health bundles can be used to ensure that appropriate services are provided during a single visit, and equally important, to create benchmarks for preventive care utilization to achieve greater population health.

Bundle Component	Top Failure Modes (% Exams without Component)	
	Comprehensive	Periodic
Radiographs	Behavior (44%) Another Provider (20%) Frequency (7%)	Frequency (65%) Behavior (18%)
Fluoride	Frequency (64%) Personal (18%) Behavior (5%)	Personal (76%) Financial (9%) Insurance (5%)
Prophylaxis	Frequency (79%) Behavior (5%) Financial (3%) Insurance (3%)	Behavior (100%)



US obesity mortality trends and associated noncommunicable diseases contributing conditions among white, black, and Hispanic individuals by age from 1999 to 2017



Federico Gerardo de Cosio

College of Health Science, University of Texas at El Paso, USA

This study aims to assess the effect of obesity as an underlying cause of death in association with four main noncommunicable diseases (NCDs) as contributing causes of mortality on the age of death in White, Black, and Hispanic individuals in the USA. To estimate mortality hazard ratios, we ran a Cox regression on the US National Center for Health Statistics mortality integrated datasets from 1999 to 2017, which included almost 48 million cases. The variable in the model was the age of death in years as a proxy for time to death. The cause-of-death variable allowed for the derivation of predictor variables of obesity and the four main NCDs. The overall highest obesity mortality HR when associated with NCD contributing conditions for the year 1999-2017 was diabetes (2.15; 95%

CI: 2.11-2.18), while Whites had the highest HR (2.46; 95% CI: 2.41-2.51) when compared with Black (1.32; 95% CI: 1.27-1.38) and Hispanics (1.25; 95% CI: 1.18-1.33). Hispanics had lower mortality HR for CVD (1.21; 95% CI: 1.15-1.27) and diabetes (1.25; 95% CI: 1.18-1.33) of the three studied groups. The obesity death mean was 57.3 years for all groups. People who die from obesity are, on average, 15.4 years younger than those without obesity. Although Hispanics in the USA have a higher prevalence of diabetes and cardiovascular disease (CVD), they also have the lowest mortality HR for obesity as an underlying cause of death when associated with CVD and cancer. While there is no obvious solution for obesity and its complications, continued efforts to address obesity are needed.

“
How the COVID-19 pandemic impacted medical education during the last year of medical school: A class survey
”

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The novel coronavirus disease 2019 (COVID-19) pandemic has changed the medical education platform for students in the United States of America (USA). In that light, medical schools had to rapidly rearrange the dynamics of their educational curricula from the traditional platforms, to incorporate telemedicine. The telemedicine platform is supported in many specialties, allowing students various options to continue their education without interruption during the COVID-19 pandemic, and beyond. Telemedicine platforms are projected to grow exponentially due to the COVID-19 pandemic, allowing a segue for medical schools to modify their curricula by incorporating telemedicine programs. These distant-, e-learning (tele-education) programs align with the recommendations and guidelines for practicing social distancing. In this article, we surveyed fourth-year medical students to better understand

their views on multiple aspects of e-learning, and its impact on their medical education during the COVID-19 pandemic. We assessed the medical students' experiences, satisfaction, insight and knowledge with e-learning, tele-education, telehealth, and their related modalities during COVID-19. We provide an organized overview and analysis of the main factors that influence medical education during the COVID-19 pandemic, while bringing forth the main challenges, limitations, and emerging approaches in the field of telemedicine and its application as it relates to medical education and e-learning across medical specialties. We outline the main themes and ideas that the medical students voiced, as to how their medical education is being impacted by the COVID-19 pandemic and how they will incorporate telemedicine and tele-education in their future career. A cross-sectional, mixed-method survey was developed and distributed

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via Google Surveys to 181 University at Buffalo, Jacobs School of Medicine and Biomedical Sciences, United States of America, 4th year medical students, in December 2020. Results were compiled and analyzed after a 6-day open period for responses to be submitted. The survey instrument consisted of questions that inquire about the students' perspectives as it relates to their rapid switch from their traditional method of learning to the on-line version of medical education during the COVID-19 pandemic. A total of 65 students responded to the survey, of which 63 completed the survey. More than half of the students (n = 63, 57%) indicated that both their specialty of interest, and (n = 21, 33%) their sub-internships were impacted by the temporary lockdown, due to the COVID-19 pandemic. Students also indicated that the top three specialties that were affected included surgery, internal medicine and obstetrics and gynecology. When the students were asked if they were satisfied with the use of aquifer for their health care e-learning, only 35% of the students were satisfied. The students expressed that the school's administration team did a good job in developing the new tele-education curriculum for those in clinical training. In addition, responses indicated

that students were open to case-based video learning and readings, when combined with the abbreviated clinical exposure during the make-up "clinical immersions periods" allowed for adequate learning. Overall, the survey responses show that more than half, approximately 54% of the medical students utilized telemedicine platforms during their clerkships that were impacted by COVID-19. The 4th-year medical students did not find tele-education and e-learning to be as effective as traditional medical education that combines in-person didactic classroom instructions and in-person face-to-face in hospital clerkships. Students felt that the telemedicine program that was rapidly set up due to the COVID-19 'lockdown' was fragmented, since it was not a formal integration of a telemedicine E-learning program. Students would have preferred more 'real' cases to follow, instead of the ready-made, aquifer type of cases. Telemedicine has significant potential to address many of the challenges facing the medical education environment today. We believe now that people have become comfortable with this method of teaching, that even after the pandemic ends, we will continue to see tele-education used as a platform for medical education.



Is it morally permissible for general practitioners to disclose their opinion on a woman's decision on abortion?



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¹St George's University, UK

²King's College London, UK

Background: This paper considers ethical dilemmas arising where a patient seeks their General Practitioner's (GP) advice regarding whether or not to have an abortion. GPs are often sought advice regarding treatments and procedures, which may occasionally lead them to facing a difficult dilemma of whether to share their personal opinion with their patient. GPs are particularly exposed to such situations. They are more accessible as the first point of contact for patients and often have a closer relationship with them. Additionally, the significance of abortion as a sensitive topic and the potential of having a personal viewpoint on its morality makes it challenging for the GP to know how to respond to such a request.

Main text: This paper explores the difficulties arising in such a situation and considers whether it could ever be ethically justifiable for GPs to express their opinions on such a matter. We consider the duties of a doctor, and highlight the need for clearer guidance for

healthcare professionals on managing tensions in their professional boundaries between their personal moral views and their professional responsibilities. A range of ethical viewpoints are considered to explore how a doctor might act.

Conclusions: This article recognises that a GP in this situation faces many ethical challenges. We propose that offering their opinion to the patient where specifically requested may be morally justifiable. A virtue ethics approach requires that the GP applies practical wisdom to make this decision, and where they do disclose their opinion ensure that it does not harm the patient and promotes flourishing. We encourage healthcare professionals to consider their own moral perspectives on sensitive issues, and reflect on how these have the potential to influence their practice. In doing so, we hope clinicians can be better should they be in a situation such as this.

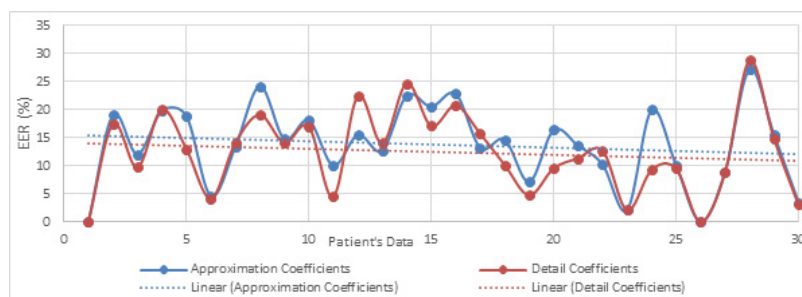
“Trust in mHealth services through data authentication”

T. S.Enamamu and A. Otebolaku
Sheffield Hallam University, UK

Wearable and IoT health monitoring technologies are gaining ground in medical field with the potential to become disruptive in our health care management sector. Most remote monitoring devices are increasing in capacity and ability to extract more personal data. The benefit of extracting health data for health care management remotely is substantial but the issue to consider is the trust of data transmitted remotely for m-health care. It is important that the trustworthiness of the data remotely collected is assured. The use of a fragment of the data for authentication will increase reliability and trustworthiness of the data. In this research work, we extracted Heart Rate Variability (HRV) and decomposed the signals into sub-bands of detail and approximation coefficients. A comparison analysis is done after the classification of the extracted features to select the best sub-bands for data authentication of remotely collected health data. The most suitable portion used for data authentication achieved an Equal Error Rate (EER) of 12.42%.

Results: The result focused on the outputs with the best performance of detail coefficient and approximation coefficient decompositions. Analyzing the results as shown in Figure 1, the detail coefficient performed better with about 63% of the patient’s data will be authenticated if an EER of 15% is used as threshold. Increasing the threshold to EER of 20% will show better performance with 86.7 % using detail coefficient decomposition for patient’s data authentication compared to 83.3% using approximation coefficient.

Discussions: To effectively monitor health data, there is need for continuous data extraction. Given its sensitivity, the data extracted remotely should be check for unauthorized data. This should be effectively authenticated as accurate as possible. The used of a single signal in this work, achieve a reasonable EER but in actual implementation, it should be expected to achieve 100% accuracy. This can be achieve using portions of multi-bioelectrical signals extracted from the patient for data authentication.





A cross-sectional study to evaluate depression and quality of life among patients with lymphoedema due to podoconiosis, lymphatic filariasis and leprosy



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³School of Public Health, Addis Ababa University, Ethiopia

Background: Podoconiosis, lymphatic filariasis (LF) and leprosy are neglected tropical diseases (NTDs) that cause lymphoedema. When left untreated they lead to substantial disability. This study determined the quality of life (QOL) and depression associated with lymphoedema in patients with podoconiosis, LF and leprosy. The study was conducted in north western Ethiopia.

Materials and methods: This baseline cross-sectional study, nested within an interventional, noncomparative, longitudinal study, included patients with lymphoedema. Depression and QOL were assessed using versions of the Patient Health Questionnaire-9 and Dermatologic Life Quality Index (DLQI), respectively that had been translated into Amharic and validated. Factors associated with depression and QOL

were assessed using multivariate linear regression analysis.

Results: Of the 251 patients with lymphoedema included in the study, 119 (47.4%) had moderate to severe depression and overall QOL was poor (mean \pm SD DLQI score: 11.4 \pm 4.2). Disability was significantly associated with depression ($\beta=0.26$; 95% CI: 0.19, 0.33). Currently receiving treatment ($\beta=-3.05$; 95% CI -5.25, -0.85), disability ($\beta=-0.08$; 95%CI: -0.15, -0.01) and social support (moderate support: $\beta=-2.27$; 95% CI: -3.66, -0.89 and strong support: $\beta=-2.87$; 95% CI: -5.35, -0.38) were significantly associated with better QOL.

Conclusion: High levels of depression and low QOL were found among patients with lymphoedema due the three NTDs in Ethiopia.



Adaptive Fisher method for disease association analysis



Lo-Bin Chang

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The Adaptive Fisher (AF) method is developed to combine marginal tests to form a single test statistic, which can be used to detect dense and sparse signals in disease association analysis. In this talk, we focus on the detection of disease-related DNA methylation regions. The association between the disease and methylation regions is modeled based on a generalized functional linear model, assuming continuous regional

effects in pre-defined genomic regions. Experiments on schizophrenia data show that the genes detected by our methods are remarkably consistent with previously reported genes related to schizophrenia. Many of the previous reports were based on evidence other than DNA methylation, which highlights the potential of our methods in detecting disease-associated DNA methylation regions.



A surprising link with unexplained infertility: A possible Covid-19 paradox?



Arianna Pacchiarotti and **Chiara Sangiuliano**

San Filippo Neri Hospital, Italy

Introduction: Unexplained infertility represents about 22–28 % of infertility causes. Factors related to unexplained infertility are various. The environment and the reproductive capacity has been proved to have a direct correlation. However, the direct relationship between stress and frequency of sexual intercourse on reproductive efficacy was not demonstrated.

Aim of this study was to assess the potential impact of insufficient sexual activity on infertility.

Material and methods: From March to May 2020, during the national lockdown imposed in Italy, we enrolled in this study 50 couples affected by unexplained infertility referred to IVF center of San Filippo Neri Hospital in Rome, Italy. Due to the lockdown, many companies started smart working and many public and private hospitals had to postpone the cycles of

ARTs.

Results: Mean age was 38.8 ± 1.8 years old. Male partners were normospermic or affected by moderate oligoasthenospermia. Contacted by phone, 7 couples (14%) reported a natural conception after years (average 2 ± 0.7 years) of infertility. No significative difference were found in terms of mean age compared to the mean age of the total group. All the 7 couples reported an increase of sexual intercourse, from 2 times / months to 3 times / week ($p < 0.001$), due to the longer time spent together at home.

Conclusion: Our findings suggest that increase of sexual activity related to changes in lifestyle have unmasked the real cause of infertility. Insufficient sexual activity should be always investigated in infertile couples. Clinicians should be encouraged to provide a counseling about the importance of increasing sexual activity before starting an active treatment.



Withholding and withdrawal of life-sustaining treatments in intensive care units in Lebanon: A cross-sectional survey of intensivists and interviews of professional societies, legal and religious leaders



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Background: Little is known about the attitudes and practices of intensivists working in Lebanon regarding withholding and withdrawal of life-sustaining treatments (LSTs). The objectives of the study were to assess the points of view and practices of intensivists in Lebanon along with the opinions of medical, legal and religious leaders regarding withholding/withdrawal of life-sustaining treatments in Lebanese intensive care units (ICU).

Methods: A web-based survey was conducted among intensivists working in Lebanese adult ICUs. Interviews were also done with Lebanese medical, legal and religious leaders.

Results: Of the 229 survey recipients, 83 intensivists completed it, i.e. a response rate of (36.3%). Most respondents were between 30 and 49 years old (72%), Catholic Christians (60%), anesthesiologists (63%), working in Beirut (47%). Ninety-two percent of them were familiar with the withholding and withdrawal concepts and 80% applied them. Poor prognosis of the acute and chronic disease and futile therapy were the main reasons to consider withholding and withdrawal of treatments.

Ninety-five percent of intensivists agreed with the "Principle of Double Effect" (i.e. adding analgesia and or sedation to patients after the withholding/withdrawal decisions, in order to prevent their suffering and allow their comfort, even though it might hasten the dying process). The main withheld therapies were vasopressors, respiratory assistance and CPR. Most of the respondents reported the decision was often always multidisciplinary (92%), involving the family (68%), and the patient (65%), or his advance directives (77%) or his surrogate (81%) and the nurses (78%). The interviewees agreed there was a law governing withholding and withdrawal decisions/practices in Lebanon. Christians and Muslim Sunni leaders declared accepting those practices (withholding or withdrawal of LSTs from patients when appropriate).

Conclusion: Withholding and withdrawal of LSTs in the ICU are known concepts among intensivists working in Lebanon, and they are being practiced. Our results could be used to inform and optimize therapeutic limitation in ICU in the country.



Forgoing health care even under universal health insurance: The case of France



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IMProving Emergency Care – IMPEC Academic Federation, France

Objectives: We investigate the reliability of a survey question on forgone healthcare services for financial reasons, based on analysis of actual healthcare use over the 3-year period preceding response to the question. We compare the actual use of different health services by patients who report having forgone health care to those who do not.

Methods: Based on a prospective cohort study (CONSTANCES), we link survey data from enrolled participants to the Universal Health Insurance (UHI) claims database and compare use of health services of those who report having forgone health care to controls. We present multivariable logistic regression models and assess the odds of using different health services.

Results: Compared to controls, forgoing care participants had lower odds of consulting GPs (OR = 0.83; 95% CI 0.73, 0.93), especially

specialists outside hospitals (gynecologists: 0.74 (0.69, 0.78); dermatologists: 0.81 (0.78–0.85); pneumologists 0.82 (0.71–0.94); dentists 0.71 (0.68, 0.75)); higher odds of ED visits (OR = 1.25; 95% CI 1.19, 1.31); and no difference in hospital admissions (OR = 1.02; 95% CI 0.97, 1.09). Participants with lower occupational status and income had higher odds of forgoing health care.

Conclusions: The perception of those who report having forgone health care for financial reasons is consistent with their lower actual use of community-based ambulatory care (CBAC). While UHI may be necessary to improve healthcare access, it does not address the social factors associated with the population forgoing health care for financial reasons.

“
**Time to resuscitate
cardiopulmonary
resuscitation! The
3R/CPR: Refill-
Recoil-Rebound**

”

Sayed Nour

Technopole of Orleans, France

Introduction: Sudden cardiac arrest (SCA) remains a major health issue worldwide with gloomy outcomes, due to poor organs' perfusion with current cardiopulmonary resuscitation (CPR) methods, deemed unsuitable for hemostatic conditions, cardiotorso-anatomy and electrophysiology. As a result, most CPR survivors succumb to multiple organ failure within the first month postarrest. Alternatively, in the purpose of return of spontaneous circulation (ROSC) with adequate organs' perfusion, we propose a new SCA management, implementing the principles of fluid mechanics, endothelial shear stress (ESS) and thoracic biomechanics for rational mobilization of the stagnant blood volumes: manually with a novel technique of cardiac massage that creates a snapping water hammer-like mechanism at the intracardiac pacemaker cells and mechanically with a circulatory flow restoration (CFR) device.

Methods: Simulated chest compressions were performed through the 5th intercostal space in professional lifeguard volunteers, placed in the left lateral decubitus position with raised legs and abdominal compression.

Expected results: Compared to CPR, bypassing the sternal barrier, refilling the heart and then compressing the chest with a recoil-rebound maneuver (3R / CPR) can significantly increase the chances of ROSC. Results of adequate organs' perfusion restorations, regardless of heartbeat, have previously been demonstrated in pediatric animal models of SCA with CFR prototypes.

Conclusion: Improvement of poor SCA results requires an overhaul of current CPR methods, impulsively applied following DC shock studies in dogs that are radically different from humans. The proposed therapy promotes adequate organ perfusion with ROSC in a substantially rational manner suitable for human morphology, cardiovascular pathophysiology and biophysics. A cost-effective method, easy-to-use by a single rescuer safely without serious complications, under all circumstances, without age or gender restrictions. The superiority and effectiveness of the 3R/CPR can be compared to CPR through periclinical studies of computational models, dummies or cadavers.



Digitalization of the healthcare supply chain: Trends and challenges



Omar Bentahar

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Logistics can play a strategic role in transforming and creating a successful new health system. However, we notice that health logistics lag behind other industrial sectors such as agro-food and retailing. Indeed, the healthcare has one of the most expensive supply chains. This delay can be remedied by the implementation of innovative digitalization technologies (eg. big data,

artificial intelligence, blockchain, automated guided vehicles). The impact of digitization on supply chain performance remains under-explored in theory and practice. We explore and discuss in our communication the impact of the digitization of logistics on the efficiency, responsiveness and sustainability of healthcare organizations.

“
Shared decision making enhances pneumococcal and influenza vaccination rates in adult patients in outpatient care
”

Kuehne F, Sanftenberg L, Dreischulte T and Gensichen J

LMU University Hospital, Germany

Insufficient vaccination rates against pneumococcal disease and influenza are a major problem in primary health care, especially in adult patients. Shared decision-making (SDM) may address major barriers to vaccination. The objective of this review was to assess the impact of SDM on pneumococcal and influenza vaccination rates in adult patients.

We conducted a systematic literature search in MEDLINE, EMBASE, CENTRAL, PsycINFO, and ERIC. RCTs and cluster RCTs were included, if they aimed to enhance pneumococcal or influenza vaccination rates in adult patients and comprised a personal interaction between health care provider (HCP) and patient. Three further aspects of the SDM process (patient activation, bi-directional exchange of information and bi-directional deliberation) were assessed. A meta-analysis was conducted for the

effects of interventions on vaccination rates.

We identified eight studies on pneumococcal vaccination and 15 studies on influenza vaccination meeting the inclusion criteria. The pooled effect size was OR (95% CI): 2.26 (1.60–3.18) for pneumococcal vaccination and OR of 1.96 (95% CI: 1.31 to 2.95) for influenza vaccination rates comparing intervention and control groups.

This systematic review and meta-analysis provide evidence that SDM processes can be an effective strategy to increase influenza vaccination rates. Further research with more detailed descriptions of SDM implementation modalities is necessary to better understand which components of SDM are most effective. Trial Registration: PROSPERO: CRD42020175555.

“
**Characterization
of the
socioeconomic
inequity
attributable to
smoking**
”

Fé Fernández Hernández and **Efraín Sánchez González**

University of Medical Science of Havana, Cuba

Background: The socioeconomic inequity attributable to smoking is a social untouchable cost. It has several forms to impact over the economy and the society in general. At same time, each impact form determines a form of socioeconomic inequity attributable to smoking. Each impact form has associated a particular social cost and particularly fiscal which relevancy will depend from the impact magnitude.

Objective: To characterize the socioeconomic inequity attributable to smoking.

Material and Methods: Was maddening an analytic research about the socioeconomic inequity attributable to smoking. The theatrical methods utilized were the comparative, the

inductive-deductive and the analysis and synthesis. As empiric method was utilized the bibliographic research.

Results: The socioeconomic inequity attributable to smoking is given by the social costs attributable to smoking. The main costs are determined by the cost over the Public Health and the costs because of the labor productivity lose attributable to smoking.

Conclusion: Smoking is a risk factor with several social and economic impacts. Each form to impact over the morbidity and the mortality carries to a particular form of socioeconomic inequity. This condition determines the multi-dimensional research from smoking for a better control over this risk factor.



Usability of 90second caregiver: A weekly, evidence-based health letter for caregivers



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²Dalhousie University, Canada

Background: Informal caregivers are family members or close friends who provide unpaid help to individuals with acute or chronic health conditions so that they can manage daily life tasks. The greatest source of health information is the internet for meeting the needs of caregivers. However, information on the internet may not be scientifically valid, it may be written in language that is difficult to read, and is often in very large doses. 90Second Caregiver is a health letter whose aim is to disseminate knowledge to caregivers in a user-friendly, weekly format, in order to improve their wellbeing.

Objective: The main objective was to test a sample of 90Second Caregiver health letters in order to assess their usability and to optimize the design and content of the health letters.

Methods: Usability research themes were assessed using semi-structured phone interviews, incorporating the Think Aloud method with retrospective questioning.

Results: Usability was assessed in the context of five main themes: understandability

and learnability, completeness, relevance, and quality and credibility of the health letter content, as well as design and format. Caregivers generally provided positive feedback regarding the usability of the letters. The usability feedback was used to refine 90Second Caregiver in order to improve the design and content of the series. Based on the results of this study, it may be of maximum benefit to target the series towards individuals who are new to caregiving or part-time caregivers, given that these caregivers of the sample found the letters more useful and relevant and had the most positive usability experiences.

Conclusions: The findings assisted in the improvement of the 90Second Caregiver template, which will be used to create future health letters and refine the letters that have already been created. The findings have implications for who the 90Second Caregiver series should be targeting (i.e., newer or part-time caregivers) in order to be maximally impactful in improving mental health and wellbeing-related outcomes for caregivers, such as self-efficacy and caregiving knowledge. The results

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of this study may be generalizable to the examination of other electronic health information formats, making them valuable to future researchers testing the usability of health information products. In addition, the methods used in this study are useful for usability hy-

pothesis generation. Lastly, our 90Second delivery approach can generate information useful for a set of similar products (e.g., weekly health letters targeted towards other conditions/populations).



Impact of COVID-19 on the incidence of Syphilis in Brazil



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¹HCFMUSP, Brazil

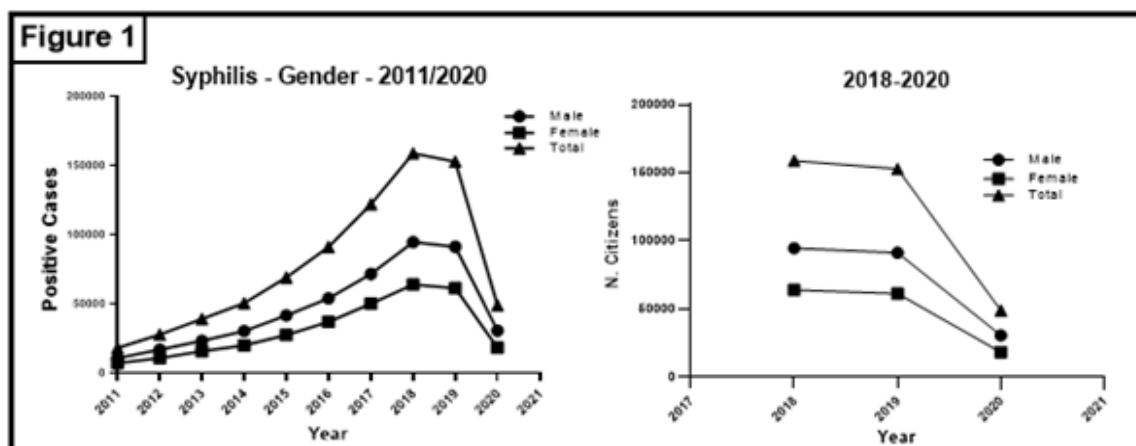
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Syphilis is a sexually transmitted infection caused by spirochete bacterium (*Treponemapallidum*) transmitted mainly by sexual activity (contact to mucocutaneous syphilitic lesions and during pregnancy in vertical transmission from mother-to-child).

We conducted an ecological study with the collection of open data of mandatory syphilis reporting (general and congenital), available in the database of the Brazilian Ministry of Health (SINAN), from 2011 to 2020, to evaluate the influence of COVID-19 and the preventive measures adopted in the reports of positive cases of Syphilis in Brazil.

In the period of 2018 to 2020, a larger proportion of cases among males was observed (average of 60%), with a decrease in incidence in women, in 2020 (37.35%). The incidence from 2018 to 2019 presented a small decrease in the number of cases in general reports (3.8%) and congenital (3.25%), with a significant difference in the decrease (Chi-square, df 153.4,4 - $p < 0.0001$ - 97.48 curve) in 2020 of syphilis' reports in Brazil, period of COVID-19 worldwide, with a drastic reduction in the number of syphilis cases in general (-67.85%) and congenital (-60.43%) reports in 2020.



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The adoption of preventive measures to reduce the COVID-19 transmission, with attention to the social isolation and restriction of people movement, provided the concomitant reduction of contact between people, and thus decreasing the possibilities of sexual intercourse, the main route of transmission of syphilis in Brazil.

The absence of guidelines, protocols and

personal protective equipment for management of COVID-19 in Brazil and the restructuring of the public health services network, reduced the number of hospitals and clinics for other diseases, including the STI, promoting the underreport of positive cases of syphilis.

The reduction in the incidence of syphilis in Brazil was similar in other countries during the COVID-19 crisis.



**To burnout or
not to burnout.
A cross-
sectional study
in healthcare
professionals
in Spain during
COVID-19
pandemic**



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Background: The current pandemic by the highly contagious novel coronavirus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) started in Wuhan (China) and has rapidly spread worldwide. In May 2020, Spain became Europe's next epicentre of the contagion and was the second country worldwide most severely affected by the coronavirus disease (COVID-19) after the United States. Of note, out of its confirmed coronavirus cases, more than 20% correspond to healthcare professionals, the highest number worldwide.

Objective: To assess the prevalence of Burnout syndrome in healthcare workers working on the frontline in Spain during COVID-19.

DESIGN: Cross-sectional, online survey-based study.

Settings: Sampling was performed between April 21st and May 3rd, 2020. The survey collected demographic data and questions regarding participants' working position since pandemic outbreak.

Participants: Spanish healthcare workers working on the frontline (FL) or usual ward were eligible. A total of 674 healthcare professionals answered the survey.

Main outcomes and measures: Burnout syndrome was assessed by the Maslach Burnout Inventory-Medical Personnel (MBI).

Results: Of the 643 eligible responding participants, 408 (63.5%) were physicians, 172 (26.8%) were nurses and 63 (9.8%) other technical occupations. 377 (58.6%) worked on the FL. Most participants were women (472 [73.4%]), aged 31 to 40 years

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(163 [25.3%]) and worked in tertiary hospitals (>600 beds) (260 [40.4%]). Prevalence of Burnout syndrome was 43.4% (95%CI 39.5; 47.2), higher in COVID-19 FL workers (49.6%, $p < 0.001$) than in non- COVID-19 FL workers (34.6%, $p < 0.001$). Women felt more burnout (60.8%, $p = 0.016$), were more afraid of self-infection (61.9%, $p = 0.021$) and of their performance and quality of care provided to the patients (75.8%, $p = 0.015$) than men. More burnout were those between 20 and 30 years old (65.2%, $p = 0.026$) and those with more than 15 years of experience (53.7%, $p = 0.035$).

Multivariable logistic regression analysis revealed that, working on COVID-19 FL (odds

ratio [OR] 1.93; 95%CI 1.37-2.71, $p < 0.001$), being a woman (OR 1.56; 95%CI 1.06-2.29, $p = 0.022$), being under 30 years old (OR 1.75; 95%CI 1.06-2.89, $p = 0.028$), and being a physician (OR 1.64; 95%CI 1.11-2.41, $p = 0.011$) were associated with high risk of Burnout syndrome.

Conclusions: This survey study of healthcare professionals reported high rates of Burnout syndrome. Interventions to promote mental well-being in healthcare workers exposed to COVID-19 need to be immediately implemented.



**Death associated
with coronavirus
(COVID-19) infection
in individuals with
severe mental
disorders in Sweden
during the early
months of the
outbreak**



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Introduction: Individuals with severe mental disorder (SMD) have a higher risk of somatic comorbidity and mortality than the rest of the population.

Objectives: To assess whether individuals with SMD had a higher risk of death associated with a COVID-19 infection (COVID-19 associated death) than individuals without SMD.

Methods: Exploratory analysis with a cross-sectional design in the framework of a population-based register study covering the entire Swedish population. The Swedish Board for Health and Welfare (Socialstyrelsen) provided anonymised tabulated summary data for further analysis. We compared numbers of COVID-19 associated death in individuals with SMD (cases) and without SMD (controls). We calculated the odds ratio (OR) for the whole sample and by age group and four potential

risk factors, namely diabetes, cardiovascular disease, hypertension, chronic lung disease.

Results: The sample comprised of 7,923,859 individuals, 103,999 with SMD and 7,819,860 controls. There were 130 (0.1%) COVID-19 associated deaths in the SMD group and 4945 (0.06%) in the control group, corresponding to an OR of 1.98 (CI 1.66-2.35; $p < 0.001$). The odds were fourfold in the age group between 60 and 79 years. Cardiovascular diseases increased the odds by 50%. Individuals with SMD without any of the risk factors under study had three-folds odds of COVID-19 associated death.

Conclusion: Our preliminary results suggest that individuals with SMD are a further group at increased risk of COVID-19 associated death. The factors contributing to this increased mortality risk require clarification.

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Transformation of a ferry ship into a ship hospital for COVID-19 Patients



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Liguria is a northwestern region of Italy that, since the WHO has declared COVID-19 as a pandemic (11 March 2020), presented 108 patients hospitalized, 34 of which were in the intensive care unit. Due to this serious epidemiological emergency, the transformation of ferry ship into a hospital ship for COVID-19 patients who were still positive after the acute phase of the illness was carried out to free up hospital beds. The conversion was localized to a single deck, where designated healthcare areas were identified.

Patients suffering from serious psychiatric disorders, a total lack of self-sufficiency, or senile dementia were not eligible for admission on board. On board, staff prepared meals for patients directly on the ship. Particular attention was placed on clinical, culture and religion factors of patients. Hygiene behavioral measures were implemented using standard/universal and specific precautions. Staff wore an FFP3 mask (N99/KN99), visor, and high protection suit; they received periodic training. The ship's crew also underwent periodic training on the infective risk of COVID-19.

From 23 March to 18 June 2020, 191 patients were admitted onto the ship, with a male majority (57.07%), from different hospital facilities in Liguria. The average age was 56 years, ranging in total from 15 to 87 years. The average length of hospitalization was 15 ± 8.9 days (range 2–57 days, median 13 days). Some admitted patients had pre-existent comorbidities, most frequently diabetes, hypertension, or chronic obstructive pulmonary disease.

The ship was fitted out to become a hub at a metropolitan level and then, at a regional level. This lightened the care burden of hospitals, freeing up facilities and healthcare staff for patients in the acute phase of the illness. One hundred and ninety-one patients were treated over three months, with a favorable outcome confirmed by their recovery and negative swab results. Patients were provided with high-level healthcare, guaranteed by the multi-disciplinary nature of the clinical competencies available. No cases of contagion between healthcare workers or crew members were recorded.



**The risk for severe
COVID 19 in patients
with autoimmune
and/or inflammatory
diseases: First wave
lessons from a large
cohort**



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Background: Data regarding the risk for severe COVID19 in patients with autoimmune or inflammatory diseases are scarce.

Objective: To estimate the risk of those patients to develop a more severe COVID19 infection

Methods: All active patients and those with dermatologic and/or rheumatologic autoimmune/inflammatory diseases identified in a single tertiary center. The charts of those tested positive for COVID19 between March 1st and May 31st, 2020 reviewed including demographics, co-morbidities and medications. COVID19 outcome of those with dermatologic and/or rheumatologic autoimmune/inflammatory diseases compared to COVID19 infected matched controls without

an autoimmune/inflammatory background.

Results: Overall, 974 of 381,268 active patients tested positive for COVID19, including 35 out of 13225 with dermatologic and/or rheumatologic autoimmune/inflammatory diseases. No statistically significant difference in severity of COVID19 infection or mortality rate found. The rate of asymptomatic, mild, moderate, severe/critical and fatal COVID19 infection was 11.4%, 37.1%, 22.8%, 11.4% and 17.1% respectively for the patients with autoimmune diseases and 17.8%, 45.8%, 10.9%, 6.8% and 18.4% respectively for the controls .

Conclusions: Patients with autoimmune/inflammatory diseases seem not to develop a more severe COVID19 infection than controls.

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Global digital public health leadership



Bandar Al Knawy

Ministry of National Guard Health Affairs, Saudi Arabia

A visionary leadership views adversities to lead to new opportunities. In response to the viral war brought by Covid-19 which is one of the worst human disasters, a new leadership toolkit is essential. This toolkit is digital leadership in health and care.

Covid-19 has brought the importance of public health to the forefront as a critical global health security issue and digital health has been essential for data and public health in this pandemic.

A global and unified approach for the current and future disease outbreaks, can be achieved by a global approach that address interoperability of health and care systems, high quality data and healthcare workforce, training & up-skilling of front liners. In addition, to enhance the culture of innovative solutions and research.

The current global public health framework allows nations to report and share limited information by a reporting mechanism (e.g. to the World Health Organization). As the world enters into the digital era, in addition to a potential centralized platform, information-

sharing has to move towards real-time high quality sharing and a peer-to-peer modes.

A multi-actor framework must be fostered to gather privacy and data protection authorities, governments, data providers, public health institutions, and researchers. To establish a robust preparedness protocols to future pandemic emergencies collaborative networks should be created in peacetime.

Sustainable funding and investment to build a global infrastructure for data exchange that is connected in back end databases run by the health system and government, allowing data, if trusted, to flow freely and securely to where it is needed for global health system.

Therefore, a framework that standardizes and verifies such information is necessary as a foundation that would help in the constructive communication and data-sharing within the international community. Such a framework should enhance communication and connectivity to cope with the scale and pressure of future pandemic events.



Emergency remote learning during COVID-19 crisis: Students' engagement



Soheil Salha and ZuheirKhaif

An Najah National University, Palestine

The purpose of the current paper is to explore the factors that influence student engagement in online learning during the COVID-19 crisis in middle school settings in developing countries where is a lack of studies about the factors influencing student's engagement in emergency remote learning during the crisis. A qualitative approach was used for data collection and analysis. Semi-structured interviews with 34 participants (14 students, 13 teachers, and 7 parents) were conducted for 20–30 min. Furthermore, online class observations were used for data collection; 13 online classes were observed. Each class was 40 min. A thematic analysis was used to categorize the findings into themes and subthemes. The findings of the study revealed that various factors influence student engagement in online learning during the crisis including infrastructure factors, cultural factors, digital inequality, and the

threat to digital privacy. Cultural factors were the important factor that influences females because of parents' culture and their bias against females using online learning compared to male students. Teachers' presence and quality of content were the major factors that influence student engagement, where parental concerns, norms, and traditions emerged as the major factors in the crisis, influencing engagement. Most of the participants reported that teaching and learning online during the crisis has broadened the digital inequality and threatened their digital privacy which influenced negatively student engagement. The limitations of this research included the limited number of participants covering a large geographic area, and the research design using diverse and often limited educational software and delivery methods. Future studies could utilize a mixed-method approach and include more participants.

“
How prescriptive analytics influences decision making in precision medicine
”

Nasim Sadat Mosavi and Manuel Filipe Santos

Universidade do Minho, Portugal

Failure of the old model of medical decision making, “one-size-fits-all”, has encouraged the healthcare/medicine landscape to take advantage of big data and analytics for tailoring the treatments, based on individual patient’s differences in gen, environment, and lifestyle. Whereas literature has demonstrated a strong contribution to the adoption of healthcare analytics over patient’s data, for better decision making, understanding the level and the degree that each type of analytics influences

decision making, is crucial for addressing the type of problems. While descriptive, diagnostic, and predictive analytics generate knowledge for decision support systems, prescriptive analytics recommends a proactive decision. This study aims to highlight the influential and effective role of prescriptive analytics for fulfilling precision medicine which is defined as an emerging approach in medical decision making.



Development of the epidemiological situation and its periodization in Russia and measures taken to protect public health



SEMENOV Alexander¹ and **SEMENOV Ilya²**

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The outbreak in China of COVID-19, was unexpected both for the Chinese authorities and for the World Health Organization. The relevant government agencies of Russia also got involved in countering the new threat. The fight against the new type of coronavirus was a serious test for both the departments responsible for public health and the entire political system.

We analyzed the work of government agencies during the pandemic and the growth of global risks to offer systematization of measures for the prevention and treatment of COVID-19 and periodization of epidemiological situation in the Russian Federation. We used the original documents of the administration of

the President of Russia, the Government, the Ministry of Foreign Affairs, the Ministry of Health, other federal ministries, the World Health Organization (WHO), as well as Russian and foreign media.

In general, the epidemiological measures taken by Russia authorities can be considered adequate. They allowed the country to get a head start of 2-3 months before the increase in the number of cases, to reconfigure and mobilize the health care system. The success of the measures taken can be confirmed by the low morbidity rate in the regions and the relatively low mortality rate in the country as a whole (less than 1%).



Challenges and strategies for Yaws eradication program in Southern Philippines



S. Kalim

Cotabato Regional and Medical Center, Philippines

Yaws is a bacterial infection that is transmitted through skin-to-skin contact among children. It is highly prevalent in areas with poor sanitation – the so-called disease in “areas where the road ends”. It has been seen among the people in the Liguasan Marsh in the Bangsamoro region in Mindanao in southern part of the Philippines. Active cases have been seen among children where they become serologically positive for lifetime. This has caused social stigma and economic impact among individuals who are applying for a job abroad.

This case study analyses the causes of the persistence of yaws in southern Philippines and recommends interventions for eradication. Key informant interviews were done with health experts, practitioners, physicians, and other key stakeholders. Focused group discussions were also done on patients and citizens from the study sites. The study was conducted in select municipalities within the Liguasan Marsh. Secondary data from previous studies were analyzed.

The study reveals that the on-going armed-conflict in the area has the greatest impact for the persistence of yaws. This is coupled by poverty and geographical inaccessibility of the area. People living in the area are uncooperative in mass screening and treatments due to prejudice and poor health literacy. Strategies were developed as part of the recommendations to design a health program towards yaws eradication. These include the peace process, endorsement for mass screening and mass treatment from local leaders including the Muslim religious leaders and Muslim health professionals, scaling-up of health literacy, and improved access through infrastructure like roads and construction of health facilities. New antigen-based diagnostic methodology/technology is also needed in community screening.

Addressing the root causes of these social problems, yaws may be eradicated sooner than we think persist which will have a better impact on the lives of the people.



**Culture as a
contributory
factor in
combatting
the Covid-19
pandemic**



James Darwin N. Lagman

Mabalacat City College, Philippines

The COVID-19 pandemic has brought people to follow stringent policies to limit and fight the spread of the virus. Each government around the world conforms to the homogeneity of the policy such as social distancing, limit mobility, quarantines, lockdowns, and wearing of a facemask. However, these policies were responded to in varied ways by different cultural communities.

Thus, this paper will examine the cultural dimension of dealing with a public health crisis such as the COVID-19 pandemic. The paper would discuss the importance of considering culture in the planning and implementation process in dealing with public health crises. The paper will also show several insights on the effective response to the COVID-19 pandemic.



A statistical method to model interrelations of patient's characteristics and symptoms of COVID-19



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Objectives: Previous studies reported characteristics of patients and symptoms associated with prognosis of COVID-19. However, conventional statistical method has a limitation in modeling interrelations of these characteristics of patients and symptoms partly because conventional statistical method assume that explanatory variables are independent from each other. The aim of this

study is to introduce a method which models interrelation of explanatory variables and apply it to COVID-19 patients.

Methods: To evaluate an interrelation of patient's characteristics and symptoms we developed a method called the Boolean Monte Carlo method (BMCM). In medicine, binary values (often represented by 0 and 1) are often used to represent patient's characteristics,

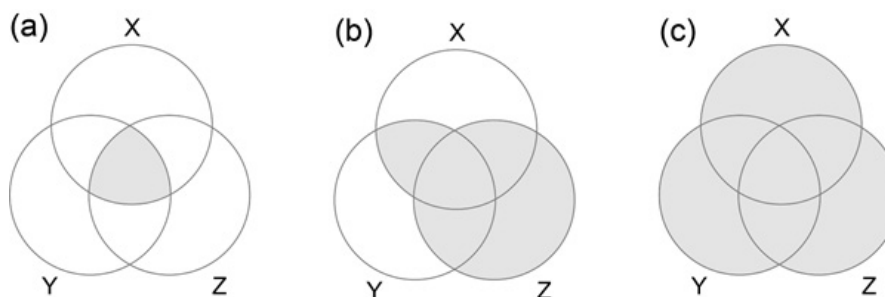


Figure Three examples of interactions among X, Y, and Z in explaining A using a Venn diagram. (a), (b), and (c) correspond to interactions $A = X \text{ "and" } Y \text{ "and" } Z$, $A = X \text{ "and" } Y \text{ "or" } Z$, and $A = X \text{ "or" } Y \text{ "or" } Z$, respectively.

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medical test results, and the presence of disease (positive or negative). Binary values can be calculated using Boolean operators (often represented by “and” and “or”), which can be regarded as an interrelation (Figure). In BMCM, we randomly assign Boolean operators between binary variables and focus on the frequencies of operators that can explain outcomes correctly. By these processes, we can statistically determine interrelations of variables in explaining outcome and calculate statistics such as sensitivity and specificity. We applied this method to the Novel Corona Virus 2019 Dataset (<https://www.kaggle.com/sudalairajkumar/novel-corona-virus-2019-dataset>), which contained data from 1085 patients with COVID-19. In the analyses, age, fever as an onset symptom, and sex were used as explanatory variables, and death as

the objective variable. For age, we set a cutoff of 65 years.

Results: Among 265 patients included in the analysis (the characteristics are shown in the Table), the interrelations for estimating death were determined as age “and” fever “and” sex ($p < 0.0001$ for both operators), i.e., satisfying the three conditions of age, fever, and sex concurrently may be associated with an increased risk of mortality. In this model, sensitivity and specificity were 25% and 89%, respectively

Conclusion: These results partly reconfirmed the results of previous study regarding COVID-19 prognosis. Carrying out the BMCM in addition to the conventional analyses can help to clarify the clinical features of COVID-19 by determining interrelations of patient’s characteristics and symptoms.

	n = 265	Mean (SD/%)
Age (years)		53.3 (±17.6)
≥65 (%)		55 (21%)
<65 (%)		210 (79%)
Sex (male, %)		158 (60%)
Fever (yes, %)		201 (76%)
Death (%)		8 (3.0%)

Abbreviations: SD, standard deviation.

Theme: Rise in Preventive Medicine and Public Health Research Market Through New Medical Technologies, Treatments and Up-to-date Studies Worldwide

“ Dental treatments during the COVID-19 pandemic in three hospitals in Jordan: A retrospective study ”

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Background: Cases of COVID-19 first emerged in December 2019. Since then, the virus has spread rapidly worldwide, with daily increases in the numbers of infections and deaths. COVID-19 spreads via airborne transmission, which renders dental treatment a potential source of virus transmission. Dental treatments require the use of handpieces, ultrasonic devices, or air-water syringes, which generate considerable amounts of aerosols. Jordan, being one of the affected countries, instituted preventive lockdown measures on March 17, 2020. Emergency dental treatments were only allowed in dental clinics of the Royal Medical Services of Jordan Armed Forces and Ministry of Health, and were prohibited in other sectors such as private clinics and universities.

Objective: The aim of this study is to investigate the dental treatments performed in three military hospitals during the 44-day lockdown period in Jordan. The investigation explores the impact of COVID-19 on the number of patients and types of performed dental treatments.

Methods: Data such as number of patients, patients' age and gender, and performed dental treatments were collected retrospectively from the hospital records and were analyzed.

Results: Our results showed a 90% (17,591 to 1689) decrease in patient visits during the lockdown period compared to regular days. The total number of treatments (n=1689) during the lockdown period varied between endodontic cases (n=877, 51.9%), extraction and other surgical cases (n=374, 22.1%), restorative cases (n=142, 8.4%), orthodontic treatments (n=4, 0.2%), and other procedures (n=292, 17.3%). The differences in gender and age group among all clinics were statistically significant ($P < .001$ and $P = .02$, respectively).

Conclusions: The COVID-19 pandemic had a significant effect on the number of patients seeking dental treatments. It also affected the types of treatments performed. Endodontic treatment accounted for almost 50% of patient load during the lockdown compared to approximately 20% during regular days.

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**High mortality
among health
personnel with
COVID-19 in
Mexico**
”

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Tecnológico de Monterrey, Mexico

Issue: On September 2020, records of mortality in health personnel were published worldwide and by country, and the country with the highest mortality in health personnel due to COVID-19 was Mexico with 1,320 confirmed deaths by COVID-19, surpassing the United States of America (USA) and the United Kingdom (UK), with 1,077 and 649 respectively.

Evidence: Some factors that contribute to this are health measures, the correct use of personal protective equipment and the higher prevalence of comorbidities in our country such

as diabetes, high blood pressure and obesity; which are risk factors for complications from COVID-19 including mortality.

Implications: This outbreak took everyone by surprise showing how vulnerable our health system is. Nevertheless, we had to reactivate the economy by allowing the opening of businesses, but this implied that health personnel (nurses, doctor, technicians, etc.) had a greater risk of complications in this country compared to other countries.



Laparoscopic sleeve gastrectomy and its effect on gastrooesophageal reflux disease



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Background: Obesity continues to be a leading public health concern associated with many comorbidities and major hindering effect on the daily lifestyle of many people around the world. Surgical treatment for obesity has proved that it is the best and most effective, durable means of preventing the life-threatening complications and serious problems associated with morbid obesity.

Objective: This study aims at identifying the effect of LSG on UGI symptoms after a mean of 6 months of follow up.

Patients and Methods: Our study was conducted on 25 morbidly obese patients undergoing LSG for weight reduction. Thorough history, clinical examination and investigations were applied including the validated Rome III Diagnostic questionnaire and UGI endoscopy on cases with sever symptoms. Patients were examined before surgery and had no primary

complications. Patients were followed up for 6 months regarding UGI symptoms specially GERD using the same validated Rome III Diagnostic questionnaire.

Results: GERD prevalence didn't significantly change although a significant number of patients recovered from GERD which support the theory that the mechanism of upper GI symptoms after LSG is mainly due to altered motility patterns rather than acid-related disorders.

Conclusion: Our results show that LSG represents a safe and effective procedure to achieve significant weight loss. GERD which was considered to be a main troublesome impact of LSG showed no significant change in prevalence, on the contrary appear to abolish the symptom in a significant number of patients who complained of GERD.



Novel and traditional anthropometric indices for identifying metabolic syndrome in non-overweight/obese adults



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Background: Metabolic syndrome (MetS) in non-overweight/obese people is insidiously associated with cardiovascular disease. Novel anthropometric indices can reflect central obesity better than the traditional anthropometric indices. Therefore, we hypothesize that these newly developed anthropometric indices can better identify MetS in non-overweight/obese people than conventional indices.

Methods: Cross-sectional data of sociodemographic, biochemical and anthropometric indices were collected from 2916 non-overweight/obese Chinese people. A body shape index (ABSI), body roundness index (BRI), waist-to-height ratio (WHtR), weight-adjusted-waist index (WWI) and abdominal volume index (AVI) were calculated. Partial correlation analysis was used to clarify the correlation between anthropometric indices and MetS variables. Binary logistic regression analysis was applied to assess the association between anthropometric indices and MetS and its components. Receiver-operating characteristic curve was used to identify the diagnostic ability of anthropometric indices for MetS and its components. The area under curve (AUC) difference between WHtR and

each new anthropometric index was compared in pairs.

Results: After adjusting for covariates, AVI had the optimal ability of identifying MetS (AUC: 0.743 for male, 0.819 for female) and the strongest correlation with high-density lipoprotein cholesterol (HDL-C) (coefficient: -0.227 for male, -0.207 for female) and the highest odds ratios (OR) with low HDL-C group (male: OR=1.37, female: OR=1.55). The WHtR was comparable to BRI in assessing MetS (AUC: 0.739 for male, 0.817 for female). WHtR or BRI could also well identify hypertension (AUC: 0.602 for male, 0.688 for female) and dysglycemia (AUC: 0.669 for male, 0.713 for female) and female's high triglyceride level (AUC 0.712). The recognition ability of the two was equivalent. The ability of ABSI and WWI to identify MetS was weak.

Conclusions: AVI is the optimal anthropometric indices to identify MetS in non-overweight/obese Chinese adults. BRI and WHtR can also be considered as discriminators, while ABSI and WWI are weak discriminators. WHtR is easy to measure. So, it is recommended as an early preliminary screening method for the MetS in non-overweight/obese people.



Clinical efficacy of prodom-assisted urokinase in the treatment of male infertility caused by impaired semen liquefaction



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Objective: To evaluate the clinical efficacy of prodom in the administration of urokinase in the vagina in couples with impaired semen liquefaction.

Materials and Methods: Overall, 261 patients with impaired semen liquefaction were randomly divided into prodom-assisted urokinase treatment (PAUT) group (n=91), syringe-assisted urokinase treatment (SAUT) group (n=86), and traditional treatment (TT) group (n=84) in the first stage. If the first stage of treatment failed, other treatment methods were initiated instead and the patients were grouped according to the newer treatment method in the second stage. The pregnancy rate, time-to-conception, and treatment costs were evaluated in each group.

Results: In the first stage, the pregnancy rate in the PAUT, SAUT, and TT groups was 69.23%,

29.07%, and 22.62%, respectively; the time-to-conception was 2.66±1.44, 3.69±2.61, and 3.86±3.00 months, respectively; and the treatment costs were 658.18±398.40, 666.67±507.50, and 680.56±480.94 \$, respectively. The pregnancy rate and time-to-conception were different in the PAUT group compared with those in SAUT and TT groups (all P<0.05). However, the difference in treatment costs was not significant (P=0.717). In the second stage, 154 non-pregnant patients were divided into nine treatment groups, and the effects of changing TT to PAUT on the pregnancy rate, time-to-conception, and treatment costs were observed to be different from those of other treatments (all P<0.05).

Conclusion: Prodom-assisted urokinase can effectively treat male infertility secondary to impaired semen liquefaction.



Prevalence of painful diabetic peripheral neuropathy and its impact on quality of life among diabetic patients in Western Region, Saudi Arabia



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Background: Diabetic neuropathy is the most common long-term complications of diabetes, frequently presenting as painful diabetic peripheral neuropathy (PDPN), which can significantly impair patients' quality of life. This study set to estimate prevalence of PDPN and health-related quality of life (HRQoL) in the setting of primary health care in Saudi Arabia.

Method: This study was conducted in primary health care centers affiliated with the National Guard Health Affairs in Western Saudi Arabia. Arabic version of the Douleur Neuropathique 4 (DN4) questionnaire was administered on diabetic patients to screen for neuropathic pain and short form (SF12) questionnaire to assess Health Related Quality of Life (HRQoL).

Results: The study screened (n = 349) type 2 diabetic patients. Prevalence of PDPN was

33.2%. PDPN was more likely to affect females (Adjusted odds ratio "AOR" = 1.96, p = 0.024), and those living with diabetes for over 15 years (AOR = 2.26, p = 0.039), and those on insulin treatment (AOR: 2.33, p=0.010) alone, or in combination (AOR= 1.78, p=0.034). Both physical and mental components of quality of life scores were significantly higher in diabetic patients without PDPN compared to those with it; 49.57±9.31 versus 40.77±8.14 for physical component QOL and 51.72±9.36 versus 44.35±8.12 for mental component QOL, p<0.001.

Discussion and Conclusion: Painful peripheral neuropathy is relatively common among type 2 diabetic patients in Western Saudi Arabia and impacts both physical and mental components of the quality of life of affected patients.



Agent-based performance management model for hospital emergency service system: A multi-agent-based framework



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Technological innovations have made possible the design of intelligent and interoperable systems to enable distributed systems' cooperation and interoperability while providing real-time monitoring and control of analytical processes. In this direction, different sensing and networking technologies have been proposed in the literature, and many Artificial Intelligent (AI) methods are used to convert systems into intelligent systems. A multi-agent system comprises intelligent software agents that can perform a specific objective autonomously by interaction and coordinated task control. This interaction enables the distributed cooperative control of the system. This study aims to design

well defined integrated multi-agent-based hospital emergency service environment with the self-decision-making capability to increase service quality. The proposed performance management model ensures that the system's management success level is measured by associating the performance of the emergency service process with the operations involved in the process. In the proposed model, goal-based learning and adaptability are defined not only to meet the new solution for performance management but also to follow this service's goals. Besides, it provides information and a prototype framework of a dynamic, flexible, and intelligent emergency service system model integrating various operations.



**A method to
produce high
contrast vein
visualization in
Active Dynamic
Thermography
(ADT)**



Eddie Yin Kwee Ng

Nanyang Technological University, Singapore

In this study, a method that will aid in the visualization of vein topology on a target area on the body of a human subject is demonstrated. An external cooling means is configured to cool the left forearm of fourteen study participants, effecting an active thermal change or recovery in the target area upon removal of cooling. An infrared (IR) thermal camera was used to capture a series of transient thermal images. These images were then processed to extract Dynamic synthetic images (SI) throughout the active thermal change or recovery process. Dynamic SI was calculated using a quantitative parameter called tissue activity ratio (TAR), which is defined by the rate of rewarming to the rate of cooling at each pixel of interest. A fixed step size of rewarming temperature (0.5 °C) was used to progressively extract multiple synthetic

images throughout the whole recovery process. Compared to a Static SI extraction method, where only a single SI results from the whole active dynamic thermography (ADT) sequence, this study demonstrates a live feed of high contrast vein visualizations by using the Dynamic SI method. Furthermore, the dependency of Dynamic SI contrast on the temperature of the external cooling stimulation was investigated. Three cooling stimulation temperatures (5 °C, 8 °C, and 11 °C) were tested, where no statistically significant difference in the resulting SI contrast was found. Lastly, a discussion is put forth on assisting venipuncture or cannulation-based clinical applications, through the incorporation of the proposed method with a projection system.



COVID-19 price gouging cases in South Africa: Short-term market dynamics with long-term implications for excessive pricing cases



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Primerio International, South Africa

The enforcement of competition law internationally was significantly bolstered during the pandemic. This was particularly the case in South Africa where temporary regulations were implemented to provide the competition authorities the powers to regulate and address the threat posed through 'price-gouging' of products considered critical to South African consumers during the pandemic. To aid in providing access to healthcare and the public interest, competition agencies have found themselves dealing with a host of issues which are broader than those which competition agencies traditionally grappled with. Our paper explores two recent decisions by the South African Competition Tribunal, and in particular, the Tribunal's approach to assessing 'dominance', in the context of temporary and 'abnormal' market conditions, brought about by the pandemic, and what these decisions mean for the assessment of 'dominance' and excessive pricing cases post the pandemic. The paper includes a view from the Competition Appeal Court ("CAC") in the subsequent appeal of the Babelegic case, discussed in the paper, wherein the CAC held most notably that, in the context of the pandemic, short cuts in decision making by the Tribunal should not be countenanced. Even so, the CAC upheld the Tribunal's first instance decision. Our paper, therefore, assesses how the Tribunal's assessment of 'dominance' and excessive pricing, as confirmed by the CAC, may have permanently introduced the concept of 'temporary market power' in South African competition jurisprudence; concerns that many companies, not otherwise perceived to be 'dominant', may fall foul of the watered-down economic test for excessive pricing during the pandemic; and the unintended consequences which may ultimately limit production or retard innovation.

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**Public knowledge,
attitudes, and
practices towards
COVID-19**
”

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¹*Respati University, Indonesia*

²*Gadjah Mada University, Indonesia*

To control the COVID-19 outbreak in Indonesia, the government implemented rules such as clean and healthy living behavior by all components of public, isolation, and early detection. Community knowledge, attitudes, and practices (KAP) towards COVID-19 play an important role in determining the readiness of the community in accepting policies in the form of behavior change from the health authority. This study aims to determine the KAP toward COVID-19 in Yogyakarta, Indonesia. A cross-sectional online survey of 155 householders was conducted between 04 May 2020 and 18 May 2020. Descriptive statistics, t-tests, and one-way analysis of variance were conducted. The survey instrument was adapted from the Guidelines provided by the Ministry of Health in COVID-19 Prevention at the Village level.

This research shows that the Indonesian public has good knowledge to prevent COVID-19 transmission. Most have a positive attitude towards the government in handling the COVID-19 pandemic in Indonesia and most have shown good practice to prevent transmission and increase immunity. However, if the knowledge, attitudes, and behavior of the public towards the dangers of COVID-19 are not comprehensive, the risk of new cases and the speed of transmission will still arise. Therefore, consistent information and education from the health authorities and/or government to the community is the key to controlling COVID-19 transmission. Besides, public categories based on demographic characteristics need to be identified so that information and education are right on target.



The possible link of gut microbiota diversity in Attention-Deficit Hyperactivity Disorder (ADHD)



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Gut-Brain Axis (GBA) is extensively studied nowadays, especially about its possible link to various neuropsychiatric disorders, one of them being Attention-Deficit Hyperactivity Disorder (ADHD). We reviewed the existing studies analyzing the gut microbiota between human samples in ADHD and health individuals.

The literatures were obtained using Google Scholar, Pubmed, and Science Direct databases. The keyword used were "ADHD", "gut microbiota", "stool", "gut", and "microbiota". All of the selected studies were case-control study.

We found forty-nine bacterium taxa, but for now none of them can explain the precise relationship between ADHD and gut microbiota. Bifidobacterium was found increased in ADHD, but other study stated that this genus was decreased in ADHD with post-micronutrient

treatment. This may suggest that micronutrient can modulate the population of Bifidobacterium and improve the behaviour of ADHD patients. Another genus found decreased in ADHD was Dialister, but found to be increased in those consumed medications. Lastly, the abundance of genus Faecalibacterium was found lower which may induce over-production of pro-inflammatory cytokines. We can say this because Faecalibacterium is known for its anti-inflammatory products, whilst ADHD patients tend to have high level of pro-inflammatory cytokines.

There were no studies that explain which bacterial taxa correlated most to ADHD. This might occur due to different model and methods in each study. Further study is needed to identify the correlation between gut microbiota and ADHD.



Extramedullary versus intramedullary bone fixation treatment of peritrochanteric fractures



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and Ahmed Mohamed Mohasseb**

Ain Shams University, Egypt

Background: In the last few decades the rate of peritrochanteric fractures has been increased because of increased rate of high velocity trauma accident and bone rarefaction due to osteoporosis in old age. DHS and PFN are the gold standard treatments used in treatment of these fractures. Nineteen studies are identified for analysis from 2007 to 2017 that meet our points of comparison.

Aim of the work: Assessing of efficacy and complications of treatment of preitrochantric fracture by DHS versus PFN.

Materials and methods: Outcomes from included trials will be combined using the systematic review manger software and manually screened for eligibility to be included. PRISMA flowchart will be produced based on

the search results and the inclusion /exclusion criteria. After pooling of the collected data from the desired search studies, the relative risk of each of intended outcome measures of interest will be calculated and compared between each of the two main methods of peritrochanteric bone fixation treatment to reach a satisfactory conclusion. Evidence of publication bias will be sought using the funnel plot method.

Results: PFN is better for treating unstable peritrochanteric fractures as it has less complications and better efficacy than DHS.

Conclusion: The present study supports the treatment of peritrochanteric fractures with PFN, as it has less failure of fixation, decreased wound infection, less duration of surgery and less non-union complication than DHS.



Effect of COVID-19 stressors on healthcare workers' performance and attitude at Suez Canal university hospitals



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Background: Coronavirus disease 2019 is an emerging respiratory disease caused by a novel coronavirus effect on 10%-20% of total healthcare workers and was first detected in December 2019 in Wuhan, China. This study was designed to assess effect of covid-19 stressors on healthcare workers' performance and attitude. A descriptive cross sectional research design was used. A Convenient sample (all available healthcare workers) physicians "112", nurses"183", pharmacists "31" and laboratory technicians "38" was participated to conduct aim of the study. Utilize the study with two tools; online self-administrated questionnaire to assess level of knowledge, attitude and infection control measures regarding coronavirus disease 2019 and COVID-19 stress scales to assess the varied stressors among healthcare workers.

Results: More than three quarter of the studied

participants had satisfactory level of knowledge and infection control measures. Approximately all of the studied participants had positive attitude regarding COVID-19. (57.4%) of the studied medical participants had moderate COVID-19 Psychological Stress levels, while (49.1%) of the studied paramedical participants had moderate COVID-19 Psychological Stress levels. But less than one quarter had severe COVID-19 Psychological Stress levels. There is a significant correlation between COVID-19 psychological stressors levels and satisfactory level of knowledge among medical participants.

Conclusion/Implications for Practice: Most of health care workers had satisfactory level of knowledge, infection control measures and positive attitude regarding COVID-19. Most of them had moderate COVID-19 Psychological Stress levels.



Effect of aging on the cornea of male albino rat and possible therapeutic role of royal jelly



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Ain Shams University, Egypt

Introduction: Nowadays interest in aging has greatly increased. Aging is a complex natural process involving every molecule in the body, that is associated with tissue dysfunction in many organs. Aging of the cornea causes major eye effects. These effects include the highly prevalent dry eye disease (DED) that affects both visual function and quality of life in elderly. Functional foods such as Royal jelly (RJ) have a growing attention. Its importance not only for its nutritional properties but also for its functional and biological properties such as antioxidant, anti-inflammatory, antibacterial and antiviral.

Aim: Was to investigate the histological effect of aging on the cornea of male albino rat and possible therapeutic role of (RJ) on senile group.

Materials and methods: Twenty-four male albino rats were used in this study divided into Group I: consisted of 6 adult male rats aged 3- 6 months. Group II: consisted of 18 senile male rats aged 18-24 months, were further subdivided into three subgroups as follows: Group IIA: negative control senile rats, not subjected to any procedure for 4 weeks. Group IIB: control senile rats and were given distilled water. Group IIC: senile rats were

	Adult Group I	Senile group Group IIA	Senile + dis-tilled water Group IIB	Senile + Royal jelly Group IIC
Total corneal thickness at the center	120.34 ± 0.633	138.17 ± 3.53 (p=0.00000025) ^a	138.19 ± 3.534	131.998 ± 1.991 (p=0.00388) ^b
Total corneal thickness at the periphery	122.23 ± 4.609	138.318 ± 1.93 (p=0.00001336) ^c	138.318 ± 1.94	107.52 ± 1.795 (p=0.000000) ^d

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Values are expressed as (mean ± SD).

P-value < 0.05 → significant.

P-value ≤ 0.001 → highly significant.

Highly significant increase as compared to adult group.

Significant decrease compared to senile group.

Highly significant increase as compared to adult group.

Highly significant decrease as compared to senile group.

given (RJ) dissolved in distilled water in a dose of 300/kg/day orally once daily for 4 weeks. The cornea of each rat was carefully dissected out and immediately fixed in 10% formalin for preparation of paraffin blocks 5 micrometer thickness. Sections were stained with (H&E), Masson's trichrome and (PAS) counterstaining with hematoxylin. Statistical analysis was done.

Results: Light microscopic examination of corneas of senile rats revealed different changes included irregularity in the surface epithelium, erosions and cytoplasmic vacuolations. The stroma showed widely separated collagen fibers with decreased keratocyte and endothelial cell count. It was concluded that (RJ) supplementation to senile rats obviously improved all layers of the cornea histologically.

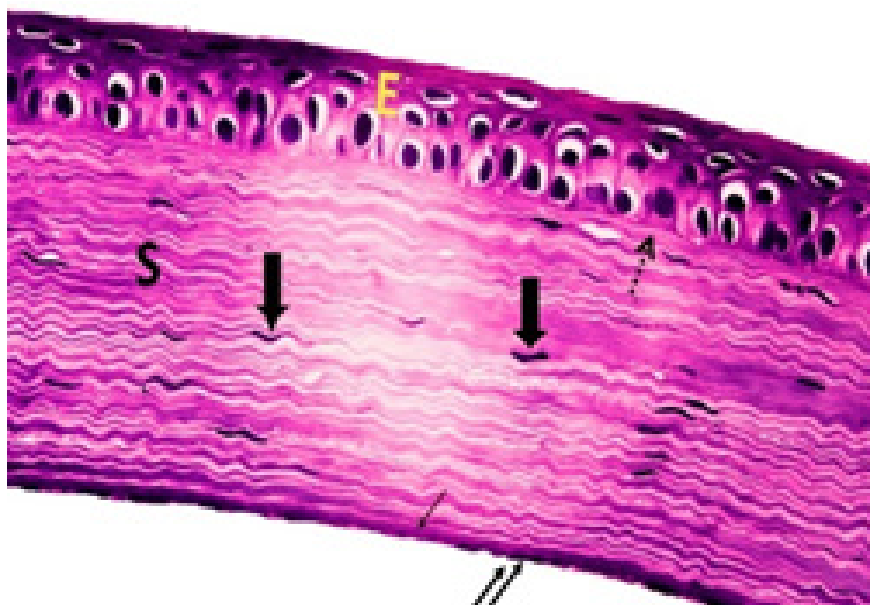


Fig. (1): A photomicrograph of a section of central cornea of adult male albino rat showing non-keratinized stratified squamous epithelium (E), resting on a uniform basement membrane. The Bowman's membrane (dot arrow) appears very thin. The stroma (S) consists of collagen lamellae and keratocytes (thick arrow). Notice the Descemet's membrane (thin arrow) and Descemet's endothelium (double arrow).



Valproate attenuates hypertonic glycerol-induced rhabdomyolysis and acute kidney injury



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Objectives: The current study investigated the effects of treatment with 300 mg/kg valproic acid on rhabdomyolysis and acute kidney injury induced by intramuscular injection of hypertonic glycerol in rats.

Methods: Four groups of male Wistar rats: control and hypertonic glycerol, valproic acid and valproic acid + hypertonic glycerol treated groups were used. Blood urea nitrogen, serum creatinine, creatinine kinase (CK) and CK MB, myoglobin and renal reduced glutathione (GSH) levels were measured. Histopathological examination of the kidneys was carried out to evaluate the degree of renal injury in each group. The expression of interleukin-1 beta "IL-1 β " in renal tissue was detected using immunohistochemistry.

Results: Hypertonic glycerol administration led to severe renal tubular damage with a significant elevation of blood urea nitrogen,

serum creatinine, creatinine kinase, CK MB and myoglobin levels and overexpression of IL-1 β compared to control group. Valproic acid administration attenuated both the muscle injury and the acute kidney injury induced by hypertonic glycerol, estimated through a significant reduction of creatinine kinase, myoglobin, and serum creatinine. Valproic acid administration caused a significant increase in GSH in the hypertonic glycerol + valproic acid group compared to the hypertonic glycerol group. A significant decrease in tubular necrosis grade, and expression of IL-1 β in hypertonic glycerol + valproic acid group compared to the hypertonic glycerol group was observed.

Conclusion: This study demonstrates, for the first time to the best of our knowledge, that valproic acid could ameliorate the rhabdomyolysis and the related acute kidney injury in rats.

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Public and healthcare providers awareness of Coronavirus (COVID-19) in Qassim Region, Saudi Arabia



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Background: The rapid and extensive spread of the COVID-19 pandemic has become a major cause of concern for both general public and healthcare profession.

Objective: The aim of this study is to analyze and evaluate the awareness of both the general public and healthcare providers in Qassim region in Saudi Arabia.

Method: A cross-sectional study was conducted randomly in different shopping malls in Qassim region from 10th of February to 10th of March 2020. All participants have answered the designed questionnaire. The structured questionnaire recorded demographics and awareness of both public participants as well as health care providers.

Result: A total of 130 participants have answered the designed questionnaire, out of which 67 participants were males (58.5%) and 54 were females (41.5%). Overall, 129 (99%) out of the 130 participants are aware of

COVID-19, and 116 (90%) have recognize it as a respiratory disease and 100% of the participants have recognized it as a contagious disease. Around 94% of the participants were able to recognize the correct incubation period of the virus. Participants of the age group 20–40 showed higher awareness level than other age groups (P value = 0.005). In addition, government employees showed higher awareness level than other profession groups (P = 0.039). Results showed significant positive correlation between the recognition of high-risk groups, reliable source of information, infection symptoms, disease prevention and available treatments.

Conclusion: General public and health care professionals from Qassim Region showed adequate awareness of COVID-19. However, there is a strong need to implement periodic educational interventions and training programs on infection control practices for COVID-19 across all healthcare professions.



Correlation of blunt cervical spinal cord injury magnetic resonance imaging tractography with the American Spinal Injury Association impairment scale motor scores



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Background: The introduction of the Subaxial Cervical Spine Injury Classification system has created the need for a holistic imaging approach that encompasses both functional (neurological) and morphological information. This study aimed to determine if there was a correlation between the blunt cervical spinal cord injury diffusion tensor imaging (DTI) fraction anisotropy (FA) value and the American Spine Injury Association (ASIA) impairment scale motor score. DTI was performed on 26 patients with blunt cervical spine injury (all men with a median age of 46 years) admitted to the Pelonomi Tertiary Hospital spinal unit. Imaging was performed using the 1.5T Siemens Magnetom Aera machine's built-in spine DTI protocol. Sagittal FA values were acquired at four different cervical spine regions (medulla oblongata, above the injury site, at the injury site and below the injury site).

Eight of the 26 patients had complete neurological fallout. 30% of the total participants had injuries at the C4/C5 level, whilst injuries involving segments below and above C4/C5 affected 15% and 55% of participants, respectively. Injury site FA values (median 0.30) were significantly lower ($p < 0.001$) than the above injury site FA (median 0.46, $p = 0.26$) and below injury site FA (median 0.42 and $p = 0.019$). A significant correlation was noted between the injury site FA values and the ASIA impairment scale motor scores ($p = 0.001$, $r = 0.87$).

Conclusion: FA value showed excellent correlation with the ASIA impairment scale motor scores.

“ Dyslipidemia management in coronary heart disease patients at King Faisal Cardiac Center over a period of two years



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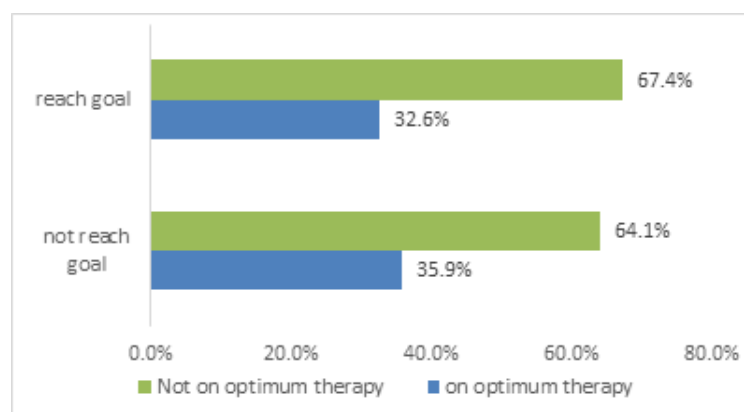
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Aim: To measure the control of dyslipidemia according to the 2017 AACE guidelines in coronary heart disease (CHD) patients at King Faisal’s Cardiac Center (KFCC) in Jeddah, Saudi Arabia over a period of two years.

Methods: Cross-sectional design was employed to collect data of CHD patients from 2016-2018. The inclusion criteria were adults who underwent cardiac catheterization and have received pharmacological therapy for over two months. Exclusion criteria were patients without follow-up lipid profiles. Primary

outcome was the percentage of patients who are reaching LDL target; and secondary outcomes included the percentage of patients who are not reaching target whether they were receiving optimum therapy or not, and determine factors associated with increased LDL-C levels.

Results: Data was collected for 1413 patients and only 546 patients were included. Using the 2017 AACE guidelines' risk categories, 74.9% of the patients were at extreme risk of cardiovascular complications, with the rest



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being at very-high risk. Lipid levels post-catheterization showed that only 16.9% of the total population achieved target LDL-C levels. The percentage of patients from the total population that were on optimum therapy and reached target were 15.6%, while 17.7% (p-value 0.545) were not on optimum therapy and reached target. When comparing the baseline and post-therapy LDL-C levels there was a mean difference of 0.440 mmol/L decrease in the LDL-C post-therapy level (2-tailed p-value 0.000). The

factors significantly associated with patients not reaching the LDL-C target levels were the AACE risk category, age, and diabetes.

Conclusion: Our study showed that regardless of optimum lipid lowering therapy, the majority of patients fail to attain lipid targets. More studies should be conducted with the aim of expanding these results and providing better support of evidence on risk factors for CHD and the optimized treatment regimens for patients at KFCC.



**Dealing with
uncertainty;
Systems dynamics
approach for
modelling South
Africa response to
COVID-19**



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Many countries in the world are still struggling to control the COVID-19 pandemic. In Sub-Saharan Africa, South Africa has reported the highest number of COVID-19 infections. The country took aggressive steps to control the spread of virus including setting a national command team for COVID-19 and putting the country on a complete lockdown for more than 100 days. Evidence across most countries have shown that, it is vital to monitor the progression pandemics and assess the effects of various public health measures, such as lockdown on mass gatherings. Countries need to have scientific tools to assist in the monitoring and assessment of effectiveness of mitigation interventions. This study presents a systems dynamic model of the COVID-19 infection in South Africa, as one of such tools. The key purpose of developing the model was to assess the extent a system dynamics model

can forecast the COVID-19 infections in South Africa and be a useful tool in evaluating government interventions to manage the epidemics through 'what if' simulations. Our model simulation shows progression and upsurge in infections with the peak being anticipated to be in the last quarter of the Year 2020. The model satisfactorily depict the general trend of COVID infections and recovery for South Africa which is in sync with the actual recorded data within the first 100 Days since the recorded first case of infection. The current presented model provides evidence to suggest that systems dynamics can be a useful tool in monitoring pandemics such as COVID-19 despite the limitation of predicting these with a lower margin of error. It provides a foundation for further development taking into account more factors or parameters that emerge for the volatile and uncertain spread of pandemics such as the first ever COVID-19 epidemic.



Burnout syndrome among medical students during traditional learning before and online learning during the COVID-19 pandemic



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Due to the COVID-19 pandemic, all educational institutions in Kazakhstan have switched to online learning (OL). Previously, using the Copenhagen Burnout Inventory, we noted that the prevalence of personal, studies-related, teacher-related burnout decreased, however, colleague-related burnout increased after transitioning from traditional learning (TL) to OL [1]. A repeated questionnaire-based cross-sectional study was conducted among medical students at Astana Medical University in the 2019–2020 academic year. The first study was conducted during the TL (October–November 2019, N=554), and the second study was conducted during the OL period (April 2020, N=694). Burnout was assessed using the Oldenburg Burnout Inventory adopted and validated by authors [2]. The prevalence of burnout among bachelor students during the period of TL and OL is presented in Fig. 1 (A).

Female students were 1.85 times more often to be disengaged during the TL ($p < 0.05$), during the OL there were no gender differences in burnout prevalence. Regardless of gender, after the transition to OL, the incidence of exhaustion and disengagement decreased (Fig. 1B). Among bachelors, 2nd-year TL students showed the highest level of burnout (42% vs 28.8%, $p < 0.001$), however during the OL there were no differences in the year of study. Among internship students, the incidence of burnout did not change (TL – 41.5%, OL – 42.9%). Zis et al. found that emotional exhaustion decreased significantly in year 4 but increased in year 6, and cynicism increased in all years [3]. In conclusion, the shift to OL due to the pandemic reduced students' burnout. Since this study was conducted in an early period of the pandemic, further research is needed to assess the impact of OL and the pandemic on medical student's burnout.

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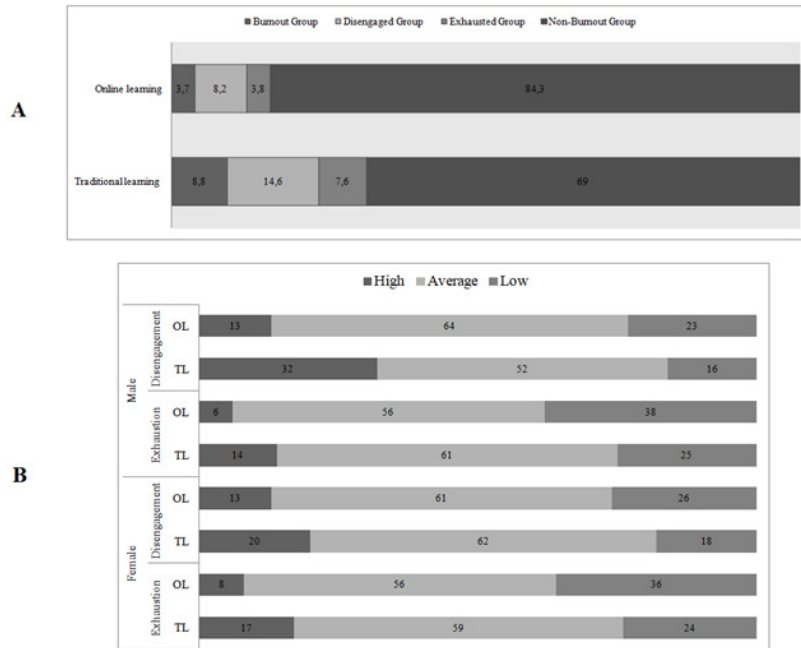


Fig. 1. The prevalence of burnout among medical students during the period of TL and OL.



Impact of economic and educational poverty on disease control in emerging countries



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Introduction: In Angola, the first cases were identified on March 21, 2020, and projections point to a number close to 28,000 infected people and more than 600 deaths to date.

Objectives: To analyze the impact of economic and educational poverty on disease control in emerging countries like Angola.

Methodology: Analytical study based on observations of the behavior of the Angolan population since the emergence of the first cases of COVID-19, the numbers of cases and deaths per COVID-19 of the last 10 months (July 2020 to April 2021).

Results: Official data show that by May 8, 2021, 28,477 cases of COVID-19 had been diagnosed, from this 26,559 (93%) occurred between the months of July 2020 and the month of April 2021 and 630 people have already died, of these 596 (95%) deaths occurred in this period. The lowest number of COVID-19 cases was observed in July 2020 were did not reach 1,000 cases (average of 27.8 cases, SD

= 18.4) and 40 deaths (average of 1.2 deaths, SD = 1.5). From that period on, the number of cases increased significantly, reaching the mark of 5833 cases in October (average of 188.2 cases, SD = 77.1) with 109 deaths (average of 3.3 deaths, SD = 2, 6). Although there are great concerns about the increase in cases, the epidemiological data of Angola are still more encouraging when compared to most countries in the world and in Africa, however, unemployment, hunger, lack of minimum conditions for survival, lack of health education, lack of assistance medical and medicine and other social phenomenon could compromise the pandemic prevention and control strategies.

Conclusion: Health education policies are more comprehensive and if we reduce social inequalities allowing even the poorest to have minimum conditions of survival such as access to water, electricity, food and other basic needs.

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Ethnobotanical and antiplasmodial investigation on Guinean *Terminalia* species



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Context and Aim: Species of the Terminalia (Combretaceae) are used worldwide in traditional medicine to treat different kinds of diseases. Among the 30 Terminalia species described in Africa, 11 have been reported in the flora of Guinea by Lisowski. In the present work, a summary of the traditional uses and antiplasmodial activity of 6 Terminalia species is presented.

Methods: Six voucher specimens of Terminalia species (*T. albida*, *T. catappa*, *T. glaucescens*, *T. ivorensis*, *T. macroptera* and *T. superba*) collected across the country were used during a semi-structured interview with traditional healers. Knowledge of these plants and their medicinal uses was collected. Methanolic extracts of the roots and stem bark of the 6 Terminalia species were prepared and tested for their antiplasmodial activity.

Results: Among the hundred traditional healers interviewed, (91) knowed *T. albida*,

(48) *T. catappa*, (24) *T. glaucescens*, (8) *T. ivorensis*, (7) *T. macroptera* and (1) *T. superba*. Terminalia species were used against several diseases among this malaria, hemorrhoids, skin diseases, jaundice. The roots and stem bark of *T. glaucescens*, *T. ivorensis*, *T. macroptera* and *T. superba* showed strong antiplasmodial activity in vitro ($IC_{50} \leq 5 \mu\text{g/mL}$). The roots and stem bark of *T. albida* and *T. catappa*, showed good antiplasmodial activity ($5 \mu\text{g/mL} \leq IC_{50} \leq 10 \mu\text{g/mL}$).

Discussion and conclusion: Traditional healers in Guinea, like Traditional healers in the worldwide used Terminalia species, for many applications including treating malaria, hemorrhoids, skin diseases, jaundice. The data from antiplasmodial activity of these Terminalia species could explain the traditional use against malaria. More investigations have engaged to further investigation of *T. albida* mainly against malaria.



Determinants of self-reported correct knowledge about tuberculosis transmission among men and women in Malawi: Evidence from a nationwide household survey



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Background: Correct knowledge about transmission of tuberculosis (TB) can influence better health-seeking behaviors, and in turn, it can aid TB prevention in society.

Therefore, this study aimed to examine the prevalence and predictors of self-reported correct knowledge about TB transmission among adults in Malawi.

Methods: We conducted a secondary analysis of the data obtained from the Malawi Demographic and Health Survey, 2015/16 (MDHS 2015/16). Questions regarding self-reported TB transmission were computed to evaluate the correct knowledge about TB transmission. The factors associated with the correct knowledge about Tb were assessed using univariate and multivariable logistic regression.

Results: Overall, the prevalence of correct

knowledge about TB transmission in the general population of Malawian adults was 61.5%. Specifically, the prevalence of correct knowledge about TB transmission was 63.6 and 60.8% in men and women, respectively. Those aged 35–44 years, having secondary or high education, belonging to the richest household, being exposed to mass media, being in professional/technical/managerial, having knowledge that “TB can be cured”, and those living in urban areas were significantly associated with correct knowledge about TB transmission.

Conclusions: The findings of this study show that if appropriate strategies for TB communication and education to address the rural masses, young individuals, poor individuals, and individuals in the agriculture sector are put in place, can enhance TB prevention in Malawi.



Evaluation of the awareness about hepatitis among Ardabil Medical University students in 2016



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Ardabil University of Medical Science, Iran

Introduction: Hepatitis is one of the five infectious diseases in the world that yearly one million people die and nearly 2 million sufferers from it. Hepatitis B virus (HBV) is the most important cause of liver disease and the major cause of death from hepatitis in Iran. The purpose of this study was to investigate the knowledge about hepatitis among medical students of Ardabil University of Medical Sciences in 2016.

Methodology: This study was a descriptive cross-sectional study that has been done on 150 students were selected randomly from Ardabil University of Medical Sciences students in 2016. The data collected by a questionnaire consisted of 25 questions. The collected data were analyzed using statistical methods in SPSS version 16. $P < 5\%$ was considered significant.

Results: Of all students, 56% were female, and the rest of them were male with an average age of 20 years. The average of student knowledge was 11.06. Nursing and health students had the highest and IT students had the lowest level of knowledge. 61.3% of students referred to the use of a common syringe as an agent for the transmission of hepatitis and 62% believed that the level of knowledge of people in the community could

prevent the transmission of HBV infection to individuals.

Conclusion: The results present study showed that students' knowledge about HBV was moderate and because of medical personnel is at high risk of infection due to their occupational status. Hence, promoting their level of knowledge about HBV is essential.

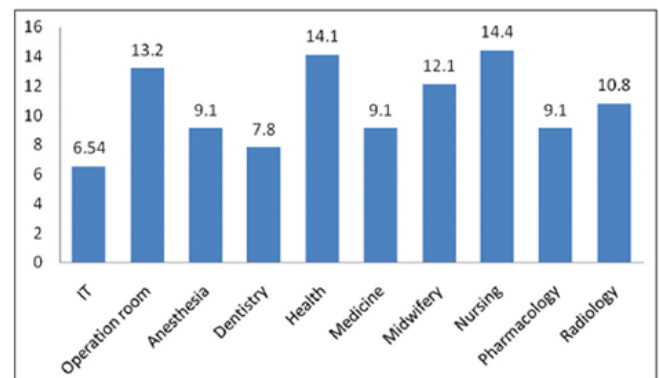


Figure 1: Mean of knowledge rate of students about ways of hepatitis B transmission



**A novel
approach
to prevent
Pterygium
recurrence**



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Objective: To evaluate the impact of the different doses and duration of mitomycin C (MMC) on the pterygium surgery outcome.

Introduction: The pterygium is one of the common ocular surface diseases; no actual pathogenesis had been described. No medical therapy for pterygium available; therefore, the only treatment is surgical removal, which might end with recurrence; to prevent this mitomycin C (MMC) used. Till now, the ideal duration of MMC exposure remained questionable. This study shows the effect of different doses and duration on the pterygium surgery outcome.

Subjects and method: It is an observational retrospective study that comprised of a total of 144 subjects, had been divided into three groups, each group consisting of 48 patients who underwent pterygium surgery with MMC and graft. All groups had received the same postoperative treatment.

Results: The incidence of recurrence was 13.5% among all the groups, of which 12.5% for group B and 0.7% for group A and no recurrence in Group C. The p-value= 0.000. The recurrence was more among males with non-significant p-value=0.5 and more among > 50 years of age with highly significant p-value=0.000. The incidence of stromalysis was 0.71%.

Conclusion: This study emphasizes that the shorter the duration (just washing) of MMC, the better the protection against scleral stromalysis, but the lower the dose, the higher the recurrence rate. Therefore, much more workup requires for setting up a customized surgical procedure, to achieve utmost preventive criteria for both recurrence and stromalysis.

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Increasing Knowledge and access on HIV services using mobile application among MSM, PWUD and Transgender women in Indonesia



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Indonesia is the only country in the Asia Pacific where the incidence of HIV is rising and the prevalence is high among the key populations including men who have sex with men, people who inject drugs and transgender women (identify as Waria in Indonesia). Our aim of this study was to assess the role of peer-customised mobile application named 'RUMAH SELA' in prevention of HIV by increasing knowledge and access to health services among the key population groups in five provinces of Indonesia.

Methods: A prospective intervention cohort study was conducted among the key populations in five provinces of Indonesia (Jakarta, West Java, East Java, Special Region of Yogyakarta, and Bali). The data were evaluated using a pre-post assessment survey conducted on a sample of 200 unique users, including 50 men who have sex with men and transgender women each, and 100 people who use drugs, with a follow-up response rate of 98% and 70%, respectively.

Results: From baseline to the endpoint of the study, there was a significant increase in comprehensive HIV-related knowledge from 20% (10/49) to 60% (29/49), 22% (11/49) to 57% (28/49), and 49% (34/70) to 74% (52/70) among men who have sex with men ($P=.004$), transgender women ($P<.001$), and people who use drugs ($P<.001$), respectively. There was also a reduction in sexual activities without condom use from 22% (11/49) to 19% (9/49), 18% (9/49) to 12% (6/49), and 21% (15/70) to 10% (7/70) among men who have sex with

men ($P=.45$), transgender women ($P=.25$), and people who use drugs ($P<.001$), respectively. There was an uptake of HIV testing by 31% (15/49) for men who have sex with men, 49% (24/49) for transgender women, and 26% (18/70) for people who use drugs after using the app. There was a reduction in injecting drugs with a used needle in drug users from 45/70 (78%) to 15/70 (26%). Measures of self-esteem increased among men who have sex with men (mean 26.4 vs mean 27.1), transgender women (mean 26.5 vs mean 27.8; $P=.02$), and people who use drugs (mean 24.0 vs mean 25.0). In addition, 27% (7/24) of men who have sex with men, 25% (4/15) of transgender women, and 11% (2/18) of drug users made an appointment for an HIV test through the app. The app was quite highly accepted by the key populations as nearly a quarter felt that they became more confident in discussing issues about sexuality, more than 80% found that the app provided sufficient knowledge about HIV, and more than half of the participants found the app to be user friendly.

Conclusions: This unique mHealth intervention using a local customised app as a self-learning tool is effective in increasing HIV-related knowledge and behaviour, and access to services with strong acceptability by the community. There is a need to scale up such interventions for efficacy testing in a larger population to provide evidence for national-level mHealth programs addressing HIV.



Location allocation of public healthcare facilities in India



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Healthcare facility locations are decided in response to demography, geography, existing healthcare and its situation, socio-economic, cultural and political conditions, and disease pattern. Public healthcare facility locations in India are done to take advantages on political fronts. The application of scientific location-allocation models helps in achieving both the real objectives of the public healthcare system as well as political benefits. The paper presents the factors deciding the

location of a healthcare facility, application of facility location models in general and on the healthcare system and basic model from discrete facility models for direct use with minimum input required for decision making for healthcare facility locations. The result of the application of the heuristic model shows efficiency in comparison to the existing practice of decision making. The papers conclude with the benefits of using the location-allocation models in the healthcare system.



**Impacts,
response,
effectiveness
and outlook
of Indian
healthcare
sector - post
Covid-19
pandemic**



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The Covid-19 Pandemic has created anxiety for regulators and healthcare authorities worldwide. It is essential to understand and analyse, post pandemic impacts on Indian Healthcare system when the Government has taken an ambitious target of bringing Indian Healthcare system among worldwide top 100 global healthcare systems. The pandemic has severely impacted human resource, worldwide so as in India. The case of Indian healthcare system is prominent since India has second largest population in the world and holds poor healthcare system. Even though condition of Indian Healthcare system is not strong still during pandemic ministry of health and welfare (MOHW)- a central Indian healthcare authority responded to crisis. The study will examine how Indian healthcare system responded during covid-19 to overcome the impacts and challenges. Though, the central Healthcare authorities responded in crisis situation but it is essential to analyse the effectiveness of responses were similar across India or had

any discrepancies, in this backdrop study will gauge the effectiveness of responses on various Indian provinces and Union territories (UT). The study will assess the response effectiveness through Data Envelopment Analysis (DEA), an empirical tool. The empirical analysis outcomes it will be easy for policymakers to revisit their existing responses/policy announcements and make necessary changes if it needed. The study will just not rework on policy framework but also reveal pain point of each zone and thus the specific mitigation measures can be suggested. Also, post COVID-19 the study also reflects upon future outlook of healthcare system in India.

Authors realised the major challenges in Healthcare sector post pandemic are- physical and mental exhaustion of the healthcare workforce, worn-out hospital infrastructure, growing "backlog" of healthcare procedures, containment (and progressive de-confinement), economic recession, will undoubtedly affect mental health (e.g., anxiety, depression) and

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physical health. Thus, to overcome these challenges few responses taken by Indian central Healthcare system i.e., timely ban on travel, sealing of borders and a near complete lockdown, contact tracing, testing, Treatment, supplies etc. Occasionally the responses taken by ministry of health and welfare (MOHWF) targets few background motives i.e., control the spread, preparedness of health infrastructure, human resources and medical supplies in place to handle the expected surge in cases. In This backdrop, authors try to establish theory around motives behind responses and steps taken by government and thereby visualize future outlook of Indian healthcare sector. Authors analyse the effectiveness of these responses via empirical linkage between responses and its preventive measures. The authors identified specific motives behind schemes announcements were, control virus spread, prepare infrastructure, prepare healthcare workforce and medical supplies and linked with input indicators i.e. during unprecedented timings and examined its effect on mortality rate and survival rate of

various provinces and UT of India, through data envelopment. The DEA will also evaluate the individual province utilization of resources and effectiveness on patients and also thereby identify state specific the pain points of Healthcare system. The study employs a data envelopment analysis on 35 Indian provinces and Union territories (28 states and 8 Union Territories) Healthcare system over a period of 1 year for year 2020-21 on monthly basis. The study will also analyse pre- COVID-19 scenario of healthcare system between 2016-2020 on quarterly basis.

The findings of the empirical analysis will help to perform the ranking of each province/ UT and reveal the specific pain points across India and its various provinces needs much improvement. Finally, based on empirical evidences authors present the future outlook of Indian Healthcare system given the current situation persist. The study will be helpful for Indian healthcare policymakers and decision makers to be vigilant about policy revisions on real time and need based.

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Occupational health morbidity and associated socio- demographic variables among street sweepers in a metropolitan city



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Background: Work related safety and health hazards are a major public health concern worldwide and are under-researched especially in low and middle income countries.

Aims: To study the socio demographic profile of the street sweepers, to assess the morbidities prevalent among the street sweepers in a metropolitan city and to study the association between socio demographic variables and various morbidities. To analyze the knowledge, attitude and practice among the street sweepers and to suggest preventive measures to improve the health of street sweepers.

Study Design : A cross sectional study

Methods: The study was conducted for a period of two months amongst 100 street sweepers in the age group of 18 to 60 years working under Municipal Corporation. A questionnaire was formulated and validated by a pilot study before the start of the study. Moreover, thorough general, clinical and systemic examination was done to find out morbidities. Exposure to any sort of occupational hazards if any was also noted.

Results: The most common morbidities observed amongst street sweepers were skin problems (91%) followed by musculoskeletal disorders (88%) predominantly in males belonging to the age group of 40-50 years. Moreover musculoskeletal disorders were

more common above 40 years (91%) while skin problems were more common below 40 years of age (95.5%). The prevalence of anemia was found to be relatively higher in females with low socio economic background (6.7%). Additionally, illiteracy was a risk factor for respiratory symptoms (14.7%). This could be due to overcrowded dwellings, ill ventilated houses and poor sanitation. It was also observed that greater the duration of services, more is the risk of morbidities like musculoskeletal disorders (88.5%), respiratory disorders (11.5%), hypertension (6.4%) and cardiovascular disorders (1.3%). As far as knowledge, attitude and practice is concerned, majority of the study subjects had fairly good knowledge about hand washing (92%), importance of using protective devices (80%) and health hazards related to sweeping (45%). Perception of the street sweepers was excellent in respect to hand washing (92%), regular use of personal protective devices (71%) and motivating co-workers regarding safety measures (96%).

Conclusion: Periodic health check up of workers should be done biannually and immediate corrective measures should be taken to protect the health of the employees at risk. Safety training and reorientation programs should also be conducted for the street sweepers periodically.



**Investigating
the roles of
meteorological
factors in
COVID-19
transmission in
Northern Italy**



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University of Central Punjab, Pakistan

The novel COVID-19 is a highly invasive, pathogenic, and transmittable disease that has stressed the health care sector and hampered global development. Information of other viral respiratory diseases indicates that COVID-19 transmission could be affected by varying weather conditions; however, the impact of meteorological factors on the COVID-19 death counts remains unexplored. By investigating the impact of meteorological factors (absolute humidity, relative humidity, and temperature), this study will contribute both theoretically and practically to the concerned domain of pandemic management to be better prepared to control the spread of the disease. For this study, data is collected from 23 February to 31 March 2020 for Milan,

Northern Italy, one of the badly hit regions by COVID-19. The generalized additive model (GAM) is applied, and a nonlinear relationship is examined with penalized spline methods. A sensitivity analysis is conducted for the verification of model results. The results reveal that temperature, relative humidity, and absolute humidity have a significant but negative relationship with the COVID-19 mortality rate. Therefore, it is possible to postulate that cool and dry environmental conditions promote virus transmission, leading to an increase in COVID-19 death counts. The results may facilitate health care policymakers in developing and implementing effective control measures in a timely and efficient way.

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International air transportation and need of intensive technological applications in Covid-19 spread control
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This paper discusses the features and need of technological applications in global aviation industry towards effective control of COVID-19 pandemic. International commercial aviation industry is a key role player and contributor to both global economy and pandemic spread control. The study details the pandemic spread control and recent technological applications to ensure safer travel procedures for ensuring predictive and public health and safety of 4.5 billion passengers and 887,000 aviation professionals. The study reviles the impact in aviation safety and economic risk mitigation as air travel of 2 million seafarers and trade ship operators contribute to 80% of global trade economy. It is found that 84% of the aviation passengers feel safer and has gained confidence on

technological applications of touch-less air travel aiding to assured public health safety. The study explains the current trends of touch-less applications in kiosks screening, e-gate, e-boarding, self-baggage drop and related technological inventions. The paper discusses about the risk in growing cyber security in the process of digitalization. The need of continuous technological developments and touch-less norms in aviation has constituted a requirement to globalize new health norms with futuristic expansion goals. The need for training in aviation and applications of Virtual Reality (VR), Augmented Reality (AR) to ensure safe operations by aviation professionals with the rate of implementation to provide optimum solution and related research findings were detailed.



Stem cell models of lung development and repair



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The lung is in direct contact with the environment which is highly contaminated with microbes and pollutants, the result of which is damage to structural cells. Under these conditions the affected cells must be repaired. Compensation of dying structural cells of lung is done by endogenous progenitor cells. Endogenous stem cells have ability for regeneration damaged epithelium via conformity their function and structure. The capability of the lung precursor cells for repair and development declines with aging, and these cells are not usually enough for relief extensive damages. The objective of exogenous stem cells transplantation (such as embryonic, adults, etc.) and the differentiated lung cells are replacement of the damaged cells. The exogenous stem cells transplantation in animal models has demonstrated, which the cells can be replaced in the lung and developed into the adult phenotypes. Exogenous stem cells-based treatments, have produced a new method for the lung diseases. The stem cell therapy and the use of differentiated lung cells are effective in the repair of damaged lung because the cells can replace the damaged cells and support endogenous renovation and development.

Introduction: The lung is a complex structure with alveoli millions, many airways and wide vascular surface that carry out the gas

exchange. The lung is in direct contact with the environment and during normal breathing, the airways transmit large volumes of air, which is highly contaminated with microbes and pollutants but lung has multi-faceted defense mechanisms, which are important for survival (Hogg et al., 2004; MokhberDezfouli et al., 2017). Despite these defensive barriers, respiratory system is vulnerable, the result of which is damage to structural cells. Under these conditions the affected cells must be renewed or die by apoptosis or necrosis. Compensation of dying structural cells of lung is done by endogenous progenitor cells to be improved (Moodley et al., 2011). Repair and regeneration of damaged pulmonary cells are slower compared to other cells in the adult tissues for example intestinal and skin cells. However, the possibility of repairing and regeneration the damaged pulmonary cells occurs after respiratory infection (Barkauskas et al., 2013). So understanding lung regeneration capacity and role of stem cells are extremely important for use of therapeutic.

The diseases of lung respond differently to the present therapies and their continuation will lead to death. Although diagnosis of timely and rapid and pharmaceutical treatments lead to improvement of early symptoms but the abilities and daily activities of patients

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are decreased and the disease signs may again reveal in the long term. Also, in some patients, the only option for survival is the lung transplantation while there is the severe shortage in the lung donor (Sueblinvong and Weiss, 2010).

Therefore, further researches should be done on ways, which can increase the lung repair and regeneration and help in the pulmonary diseases treatment. The recent results represent, which the stem cells application can be effective in regeneration and repair of the damaged tissue (Wang et al., 2010). Therefore, one way for treatment of lung diseases is stem cell therapy, which can replace the cells of damaged and endothelial epithelial and support endogenous cells renovation. When the progenitor cells activity of lung is impaired due to damage, replacement of endothelial and epithelial cells is disrupted. This leads to renovation disruption (MokhberDezfouli et al., 2017). The stem cells application can help in replacement of endothelial and epithelial cells after severe damages. Furthermore, the healthy part of the lung can enhance the healing process and prevent fibrosis via the regeneration stimulation and possible mechanisms including immunomodulation and the release of trophic factors (Moodley et al., 2011).

Development of lung: First, the definitive endoderm forms from inner cell mass after gastrulation. Then, the definitive endoderm develops the gut tube and is patterned along the anterior-posterior and the dorsal-ventral axes via the paracrine signals from the mesoderm (Zorn and Wells, 2009). Nkx2.1+ endoderm buds from the ventral anterior foregut to form the lung sprouts and then causes uniform divergence to develop the respiratory tree. Differentiation of cell continues in the early postnatal period to generate the multiple cell types, which the adult lung develop (Morrisey and Hogan, 2010; SadeghianChaleshtori et al., 2016).

For production of pulmonary epithelial cells in vitro should pursue the same development as the fetal lung in the culture medium. So that, the stem cells should be induced to spread the definitive endoderm, followed by the generation of anterior foregut endoderm, and ultimately differentiation into the the lung lineages. The researchers have showed remarkable advance in the development of differentiated lung cells from the stem cells (Roszell et al., 2009; Schmeckebier et al., 2013; Huang et al., 2014; MokhberDezfouli et al., 2019). In the future, more knowledge of normal development of lung may help researchers for prevent from the pulmonary abnormalities.

The lung repair process in damage: The pulmonary repair process after damage is a complex phenomenon. Endogenous stem cells have ability for regeneration damaged epithelium via conformity their function and structure. The examination on airways epithelium repair display that the improvement process of airway epithelium inclusive differentiation, migration of adjacent cells for cover the empty region, the progenitor cells proliferation for repair cell number and the cells differentiation for regeneration the cells function (Kamaruzaman et al., 2013; SadeghianChaleshtori et al., 2020a).

The airways epithelium after injury, starts the improvement process for repair the blood-air barrier integrity. The cells of ATII differentiate into the cells of ATI that repair the epithelial coverage entirety. Polymorphonuclear leukocytes act until restore the pulmonary damage with secretion of the destructive agents. Meantime, the macrophages and alveolar cells eliminate the compounds of protein from the alveoli and the lung function improve (Saguil A, Fargo, 2012; SadeghianChaleshtori et al., 2020a).

Stem cells and precursor cells: The stem cells can repair the damaged cells location by the internal renewal system (Biehl and Russell,

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2009). The potential sources of precursor cells are recognized for the airways and lung epithelium and are distributed into two groups: the stem cells of endogenous and exogenous. The lung is a complex organ with more than forty types of different cell that there are distinct populations of progenitor cells in separate anatomical zones along the respiratory tree (Sueblinvong and Weiss, 2010).

Moreover, the essential role of precursor cells of lung in repairing and regeneration the damage, the epithelial cells reversible phenotype and mucus plays an significant role in the damage repair (Wang et al., 2007). There are the endogenous stem cells types in the airways and lung. The capability of the lung precursor cells for restore (that is often discussed as the natural regeneration capacity) declines with aging, and these cells are not usually enough for relief extensive damages (SadeghianChaleshtori et al., 2020a). The objective of exogenous stem cells transplantation (such as embryonic, adults, etc.) and the differentiated lung cells are replacement of the dead cells or the

damaged cells. The autologous or allogenic stem cells transplantation in animal models has demonstrated, which the cells can be replaced in the lung and developed into the adult phenotypes and as a result, the cellular response enhancement to injury (Kotton et al., 2001; SadeghianChaleshtori et al., 2020a). Exogenous stem cells-based treatments, have produced a new method for the lung diseases such as acute respiratory distress syndrome (Sadeghian Chaleshtori et al., 2020b).

Conclusion: In the future, more knowledge of normal development of lung may help researchers for prevent from the pulmonary abnormalities. The capability of the lung precursor cells for repair and development declines with aging, and these cells are not usually enough for relief extensive damages. The exogenous stem cells transplantation in animal models has demonstrated, which the cells can be replaced in the lung and developed into the adult phenotypes. The stem cell therapy is effective in the repair damaged lung because the cells can replace the damaged cells.



COVID-19 lung CT image segmentation using deep learning methods: U-Net versus SegNet



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Background: Currently, there is an urgent need for efficient tools to assess the diagnosis of COVID-19 patients. In this paper, we present feasible solutions for detecting and labeling infected tissues on CT lung images of such patients. Two structurally-different deep learning techniques, SegNet and U-NET, are investigated for semantically segmenting infected tissue regions in CT lung images.

Methods: We propose to use two known deep learning networks, SegNet and U-NET, for image tissue classification. SegNet is characterized as a scene segmentation network and U-NET as a medical segmentation tool. Both networks were exploited as binary segmentors to discriminate between infected and healthy lung tissue, also as multi-class segmentors to learn the infection type on the lung. Each network is trained using seventy-two data images, validated on ten images, and tested against the left eighteen images.

Several statistical scores are calculated for the results and tabulated accordingly.

Results: The results show the superior ability of SegNet in classifying infected/non-infected tissues compared to the other methods (with 0.95 mean accuracy), while the U-NET shows better results as a multi-class segmentor (with 0.91 mean accuracy).

Conclusion: Semantically segmenting CT scan images of COVID-19 patients is a crucial goal because it would not only assist in disease diagnosis, also help in quantifying the severity of the illness, and hence, prioritize the population treatment accordingly. We propose computer-based techniques that prove to be reliable as detectors for infected tissue in lung CT scans. The availability of such a method in today's pandemic would help automate, prioritize, fasten, and broaden the treatment of COVID-19 patients globally.



**Antihyperlipidemic
and antioxidant
properties of hydro-
alcoholic extracts
from *Anogeissus
leiocarpus*
(Combretaceae)**



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University of Lome, Togo

Anogeissus leiocarpus (Combretaceae) is a medicinal plant used in Togo to treat diabetes mellitus and others diseases. The present study was undertaken to evaluate the antihyperlipidemic and antioxidant activities of total extract and fractions of roots of *Anogeissus leiocarpus*.

The antihyperlipidemic activity of the total extract and the supernatant was performed in vivo by the fructose overload test in ICR mice. Antioxidant potential was determined in vitro by methods based on scavenging of DPPH*, total antioxidant capacity and reducing power. After the screening, phenolic compounds and flavonoids were evaluated by the well-known colorimetric assay using respectively Folin-Ciocalteu reagent and aluminium chloride.

The results obtained showed that the total extract and the supernatant significantly

reduced the serum and liver levels of triglycerides and hence the level of VLDL-Cholesterol compared to hyperlipidemic mice. In vitro the total extract and fractions had the ability to scavenge free radicals, to reduce metal and possessed strong total antioxidant activity. Phytochemical screening revealed the presence of polyphenols, flavonoids, alkaloids, tannins and saponosides in the extract and fractions. And the supernatant fraction contained more polyphenolic compounds than others.

From this study, it is concluded that the total extract and fraction of *Anogeissus leiocarpus* possessed strong antihyperlipidemic, antioxidant properties and were riched in polyphenols, which can be used in the treatment of diabetes mellitus' complications. Hence, the supernatant fraction was the most biologically active.



Socioeconomic status and health literacy as the important predictors of general health in Iran: A structural equation modelling approach



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Background: We aimed to determine the level of health literacy (HL), and its association with general health. In addition, we investigated the direct and indirect association of socioeconomic status (SES) and general health among the adult population in Iran.

Methods: This cross-sectional study involved 750 literate adults' people. The SES was assessed based on the owning of assets HL was evaluated using a validated questionnaire in Iran. General health was assessed using the WHO general health questionnaire. The simple and adjusted linear regression models, and structural equation modeling (SEM) were used for data analysis.

Results: In adjusted model, female gender,

higher level of education, use of books, pamphlets, or brochures as a source of health information, the higher level of SES were positively associated with higher HL. In addition, the HL was significantly associated with higher scores of general health. Results of SEM showed that the direct effect of SES on general health was not significant, but the indirect effect via HL was significant (path coefficient: 0.24; $p < 0.001$).

Conclusion: Results of our study indicated HL is strongly associated with general health among the adult population. SES had a significant indirect association with general health via the effect on health literacy.



Physician task load: Strategies to mitigate stress among doctor—An observational study



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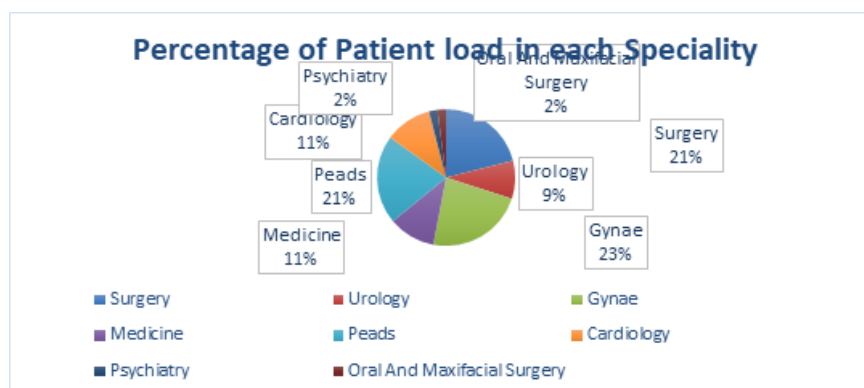
²King Edward Medical University, Pakistan

Introduction: The roster and timetables of emergency, outpatient department (OPD), and on-call services in a specialty are designed keeping in view the human resource, strength, and number of consultants in the concerned department to keep the workload balanced. The working hours and working conditions are associated with an immense influence on the physical mental and social well-being of the physicians. Our study aims at assessing the workload on physicians working and various departments of a tertiary healthcare center. We evaluate the nature of the skill set associated with numerous fields.

Material & Methods: Physician task was

determined by using four parameters e.g. Mental demand, physical demand, Time demand, and effort demand.. Hospital records were used to obtain data regarding the Patient load from October 2020 to November 2020.

Results: Our survey showed that the highest patient load was observed in gynecology (23%) followed by Paediatrics and Surgery both comprising 21% of the total patient task load.. The physicians reckoned that the “time demand” was the greatest in urology and approximately equal in all other specialties. Combined demands of physical, mental, time and efforts, urology, and maxillofacial surgery were on the top of the list. Psychiatry was



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graded with the lowest combined demands of mental, physical, time, and efforts.

Discussion: Our survey was directed to assess the hectic schedule of physicians working in various specialties. A self-rating questionnaire asking time, effort, physical & mental exertion levels sets a scale that may help the predecessors to understand the demands of the field. This survey may serve as an introduction to the interface of the field. Interestingly, urology in contrast to other allied surgery fields requires more effort. The mental acquaintance of the professional must match with his skills and his passion. Mental

satisfaction increases when physical stress levels are bearable. Women in Pakistan must balance between work and household chores. The stress of household and hospital can be detrimental to the physical and mental health of women.

Conclusion: Our study depicts that Urology & Internal Medicine are more time demanding as well as mental stress for the physician. We should focus on stress management & reductions for physicians in order to provide them a better workplace and decrease the workload at their practice.



Distribution, bioaccessibility and human health risks of toxic metals in peri-urban topsoils of the Kumasi Metropolis



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The occurrence of heavy metals in urban soils is of great environmental concern due to the unwanted health effect associated with their excessive exposure. The study assessed levels of heavy metals (As, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Sn, V, and Zn) in peri-urban communities of the Kumasi metropolis and evaluated sources and potential health risk associated with exposure to these metals. Soil samples collected from topsoils at a depth of 0–10 cm were subjected to x-ray fluorescence (XRF) spectroscopy analysis for total metal quantification. The XRF results were then confirmed by inductively coupled plasma mass spectrometry. Soil pH, conductivity, and total organic carbon were determined using standard procedures. The mean concentrations (mg/kg) of metals were As (10.11), Cd

(12.91), Cr (77.97), Cu (20.20), Fe (23031), Pb (18.60), Mn (158.68), Ni (29.33), Sn (8.83), V (78.21) and Zn (49.27). The pH and electrical conductivity were in a range of 6.5 - 8.5 and 153 - 8990 μ S/cm respectively. The mean total organic carbon was 8.85%. Pollution indicators such as enrichment factor, contamination factor, and pollution load index all showed that soil in the study area is of low degree of contamination. The potential ecological risk index projected a low-risk effect. In contrast, the hazard index and carcinogenic risk index indicated no significant human health risk associated with exposure to the metals presently. However, to regulate bioaccumulation effects, constant monitoring is essential.

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Affecting structural factors on the entrepreneurship behaviours of the academic members of healthcare
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Background: The study aimed to assess affecting structural factors on the entrepreneurship behavior of the academic members of healthcare in Qazvin University of Medical Sciences, Central Iran.

Methods: This was a descriptive, cross-sectional study conducted among faculty members working in five faculties of Qazvin University of Medical Sciences, Iran in 2018. Data were collected using a three-part standard questionnaire including demographic characteristics, entrepreneurial behavior and structural factors questions. ANOVA and linear regression modeling were used in STATA software version 14.

Results: Of 270 academic staff who participated in the study, 204 (73%) completed the questionnaire. The mean score reported for entrepreneurial behavior was 3.76 ± 0.55 considered high tendency toward entrepreneurship. Moreover, the average conditions of the structural elements have been 2.51 ± 0.89 considered average. Linear

regression analysis showed that along with increasing age, entrepreneurship behavior increased ($P=0.018$, $\beta=0.52$), while an increase in educational level led to a decrease in entrepreneurship behavior ($P=0.001$, $\beta=-0.74$). In a final model, organizational structure revealed a significant effect on entrepreneurship behavior ($P<0.001$, $\beta=0.25$). Only physical facilities didn't show a statistical significant effect on entrepreneurship score ($P>0.05$).

Conclusion: Universities must also pay attention to acquiring and developing the science and technology gained from academic research and transferring them through entrepreneurship channels. Considering the effect of structural elements on entrepreneurial behavior of the academic members, the need for such substructure in the universities and the country's higher education organizations to assist development of entrepreneurial behavior among the academicians is greatly felt.



**Postnatal care
service utilization
and associated factor
among reproductive
age women who live
in Dolo Addo District,
Somali region,
Southeast Ethiopia**



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The Postnatal period is a critical time for both mothers and her baby. A care given during this period is reduce a numerous of maternal and neonatal death. Despite its importance of postnatal care utilization, little is known about this postnatal care utilization and associated factors in this study area, so this study aimed to assess postnatal care services utilization and associated factors among reproductive women who gave live birth in last two years in Dolo Addo District Somali region southeastern Ethiopia. A community-based cross-sectional study was conducted among 388 women who gave live birth during last two years prior to the study. Data was collected by using structured questionnaire. Bivariate and multivariable logistic regression analyses were done. During multivariate analysis a variable with p-value less than 0.05 declared

significantly associated with postnatal care service utilization. This study reported that prevalence of postnatal utilization is 22.2% among reproductive age women in Dolo Addo district. Factor associated with PNC included, having ANC visit during pregnancy (AOR=3.03, 95%CI=1.74, 5.29), and place of delivery (AOR=2.23, 95%CI=1.25, 3.98) and maternal health care decision power (AOR=1.78, 95%CI=1.05,3.01) were a factors significantly associated with postnatal care service utilization. In this study nearly quarter of the women utilize PNC in Dolo Addo District. In order to enhance PNC in this area intervention should be targeted during ANC follow up, during labor and delivery. Furthermore, crucial steps should be taken to empower women which improve utilization of maternal health care service.



**Tenofovir Disoproxil
Fumarate for
prevention of
mother-to-child
transmission of
Hepatitis B virus: A
systematic review
and meta-analysis
of randomized
control trials**



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Background: Hepatitis B virus (HBV) infection caused by mother-to-child transmission (MTCT) continues to pose challenges to global health. This study aimed to assess the efficacy and safety of tenofovir disoproxil fumarate (TDF) for preventing HBV MTCT.

Method: PubMed and the Cochrane Central Register of Controlled Trials were searched through August 2020. Randomized controlled trials (RCTs) were selected that evaluated the efficacy and safety of TDF for preventing MTCT of HBV compared with the standard of care,

placebo, or other HBV therapies. The primary outcomes were HBV MTCT rate and maternal HBV DNA level. Secondary outcomes were infant and maternal safety outcomes. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Guidelines, and prospectively registered on PROSPERO (CRD42020186275).

Results: Of 240 citations, three RCTs that involved 651 participants were included. The pooled result showed that TDF can reduce the risk of HBV MTCT after 6 months postpartum

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by 80% (risk ratio RR=0.2, 95% CI [0.06-0.7], n=584) with low heterogeneity (I²=0%). TDF demonstrated HBV DNA suppression at delivery, though there was heterogeneity among individual studies, (RR=0.13, 95% CI [0.08-0.20] and (RR=0.36, 95% CI [0.27-0.49])). Maternal and infant safety outcomes were comparable among treated and untreated

mothers and infants born to them. The quality of evidence varied from high to very low.

Conclusion: There is evidence that TDF effectively interrupted MTCT of HBV and suppressed HBV DNA level. Available studies on safety are very limited and heterogeneous, emphasizing the need for additional RCTs with complete safety indicators.

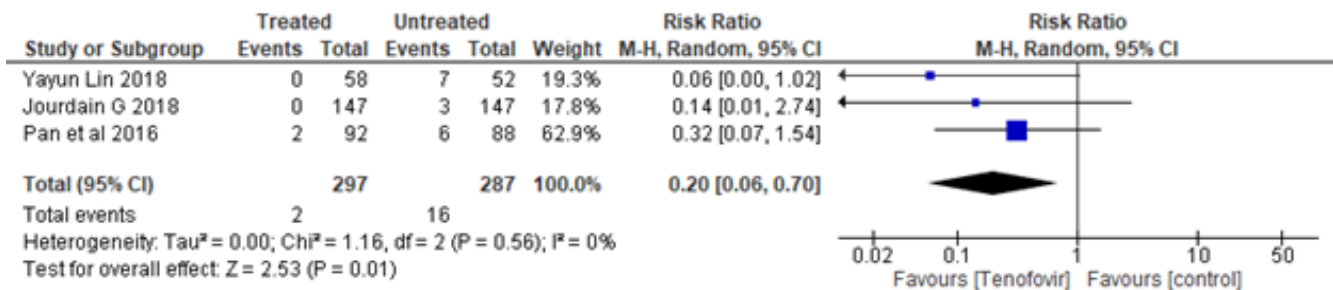


Figure: HBV infection after 6 months postpartum



Assessment of the prevalence of intestinal parasitic infections and associated habit and culture-related risk factors among primary school children in Debre Berhan town, Northeast Ethiopia



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Background: Intestinal parasitic infections (IPIs) are still among the major public health issues in developing countries. Assessing the prevalence of IPIs and potential risk factors in different localities is essential to enhance control strategies. To date, no prevalence assessment study was conducted in Debre Berhan town. Therefore, the aim of this study was to assess the prevalence of IPIs and associated habit and culture-related risk factors among primary school children in Debre Berhan town, Northeast Ethiopia.

Method: School based cross-sectional study was conducted from April to June 2017. A total of 645 children aged 6-15 years were selected from six primary schools in Debre Berhan town via a multistage random sampling technique. A structured questionnaire was used to collect data about sociodemographic and potential risk factor variables. Fresh stool samples were collected from each child and examined using direct smear and formal-

ether concentration technique.

Result: Among the 645 children participated in the study, 341 (52.9%) were infected by one or more intestinal parasites. Helminths (33.8%) were more prevalent than protozoa (20%). Double parasitic infection rate was 0.9%. The predominant parasites were *Ascaris lumbricoides* (22.6%), *Entamoeba histolytica/dispar/moshkovskii* (18.1%) and *Hymenolepis nana* (5.7%). Multivariable logistic regression analysis showed that age of child (6-9 years), family size (above 5), mother's illiteracy and primary education, father's illiteracy, urban-farmer father, manual-worker father, not washing hands before eating, unclean fingers, open defecation site (ODS) near residence, latrine type, cultural response to dropped food (cleaning and eating; 'kiss and replace'), habit of playing with waste water, habit of playing with soil, habit of sucking fingers and habit of eating when playing were significantly associated with IPIs ($p < 0.05$). Likewise, age (6-

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9 years), mother's illiteracy, urban-farmer father, not washing hands before eating, ODS near residence, tradition of cleaning and eating dropped food, habit of playing with soil, sucking fingers and eating when playing were identified as significant risk factors of *A. lumbricoides* infection.

Conclusion: High prevalence of IPI among the study participants demands improvement of environmental sanitation, personal hygiene, and health education regarding the potential habit and culture-related risk factors.



Level of food consumption score and associated factors among pregnant women at SHEGAW MOTTA hospital, Northwest Ethiopia



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Background: Several studies conducted to access the status of household food insecurity in Ethiopia show that the nutrition problem is still highly prevalent especially in pregnant women and children. This study was conducted in 2018 main harvesting season with the principal objective to assess the level of food consumption score and associated factors among pregnant women attending antenatal service at Shegaw Motta Hospital.

Methods: Institution based cross-sectional study was conducted among pregnant women attending antenatal care service at Shegaw Motta Hospital, EastGojjam Zone, Northwest Ethiopia. Primary data of 422 pregnant women were collected using interviewer administered structured questionnaire and a systematic random sampling technique was used to select study participants. The standardized World Food Program eight food groups English version questionnaire was translated to the local Amharic language and used along with

the Ethiopian food composition table. The collected data were subjected to descriptive statistics and analyzed with SPSS software.

Results: From the total of 422 pregnant women, 1.9% (95% CI: 0.7–3.3) of the respondents' food consumption score were poor, 16.6% (95% CI: 13.0–20.4) were borderline and the remaining 81.5% (95% CI: 77.5–85.1) had acceptable food consumption score. Residence, being rural or urban [AOR = 4.594;95%CI: 1.871–11.283, P = 0.001], religion status, being an Orthodox [AOR = 0.073;95% CI: 0.021–0.254, P < 0.0001], were factors associated with food consumption score.

Conclusions: Food consumption score among pregnant women seems to be highly unacceptable. Residence and religion were factors associated with food consumption score. Therefore, appropriate nutrition education should be given.



Open Defecation-Free slippage and its associated factors in Ethiopia: A systematic review



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Background: Recent studies have shown an increase in open defecation and slippage of open defecation-free certified villages in Ethiopia, despite significant progress in the country on sanitation programs. Hence, realizing existing facts, this study was conducted aiming at a critical review of the available literature and to provide consolidated data showing the level of slippage and its associated factors in Ethiopia.

Methods: Systematic literature searches were performed from four international databases. The search involved articles published from December 2013 up to June 2019. Cochran's Q and I2 test statistics were used to check heterogeneity among the studies. To negotiate heterogeneity from qualitative data, we used a mixed-method approach. The researchers also conducted publication bias assessment and sensitivity analysis. A random effect Metaanalysis was employed to determine the pooled estimates with a 95% confidence interval (CI). Data analysis was performed using the CMA V.3 software program.

Results: After screening 1382 studies, 12 studies were finally included in this systematic

review and meta-analysis. The estimated pooled rate of open defecation-free slippage in Ethiopia was 15.9% (95% CI 12.9% - 19.4%). The main contributing factors for open defecation-free slippage were lack of technical support, financial constraints, low-quality building materials, improper program implementation, and lack of sanitation marketing.

Conclusion: It was estimated that one out of six Ethiopian households engaged in open defecation after they declared open defecation-free status, implying the low possibility of achieving the target sanitation for all in 2030. Therefore, the government of Ethiopia and its partners should better give special attention to the following options: 1) awareness for open defecation-free slippage, 2) integrate post-open defecation-free follow up in Community-Led Total Sanitation program, and 3) encourage studies on pro-poor improved sanitation technologies.



COVID-19-related risk perception, anxiety and protective behaviors among Nigerian adults: A cross-sectional study



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University of Ibadan, Nigeria

Background: Pandemics such as the current COVID-19 pandemic are often associated with heightened fear and significant adjustments in health behaviours.

Aim: This study aimed to assess perceived risk, anxiety and protective behaviours of the general public during the early phase of the coronavirus disease (COVID-19) pandemic in Nigeria.

Methods: An online cross-sectional study among 1197 respondents aged 18 years and above between 27 April to 16 May 2020.

Result: More than half (61.9%) of the respondents had high risk perception towards COVID-19, and high anxiety level was found

in 37.2%. Male gender, being a Christian, having more than 12 years of formal education and high risk perception were positively associated with observance of more than one protective measure against COVID-19. The predictors of COVID-19-related anxiety were high risk perception and being a Muslim.

Conclusions: This study showed that risk perception has an influence on both anxiety and observance of protective behaviours.

Being a novel experience, this research has implications to support current and future responses to a pandemic experience.



Low incidence of COVID-19 in the West African Sub-region: Mitigating healthcare delivery system Or a matter of time?



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The study described, and examined COVID-19 pandemic trends of growth and fatalities arising from its complications among tested patients in West Africa. Countries around the world have employed several measures in order to control the spread of the pandemic. In spite of the poor state of healthcare delivery system in West Africa, the spread of the pandemic is relatively low compared to reported cases in other regions of the world. The study addresses this limitation by asking this question: is the low incidence of Covid-19 in West Africa a mitigating healthcare delivery system or a matter of time? The study adopted a cross-sectional time series method. Data for Ghana, Nigeria, Burkina Faso, Ivory Coast, Senegal, Niger Republic and Global data were extracted from the World Health Organisation COVID-19 data bank. The incidence growth rate, and fatalities

arising from COVID-19 complications were generated from the total reported cases and fatalities. Data were extracted in intervals of 7 days starting on March 15, through April 19, 2020. The results showed that COVID-19 pandemic accounted for 92.3%, 97.8%, 90.3%, 65%, 90.4%, 93.6%, and 97% complications that led to deaths of patients in Burkina Faso, Nigeria, Senegal, Ghana, Niger Republic, Ivory Coast, and WestAfrica respectively. Also, the results showed that there was a strong significant association between the incidence and fatality growth rates for Covid-19 in West Africa ($\beta = 0.032$; $t = 12.70$; $p < 0.001$). The study concluded that the threats presently posed by Covid-19 seems to be minimal in West Africa despite the poor condition of healthcare delivery in the region.



Prevalence and professional implication of updated versus previous hypertension classification



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Background: Hypertension remains the global challenge and the leading causes of worse cardiovascular event with 7.5 million toll deaths. The 2010 WHO estimate was 1.3 billion representing 31.1% of all adults with an astounding increase in low and middle-income countries including Sab-Saharan Africa.

Methods: This cross-sectional study was undertaken in two beverage industrial workplaces with a sample of 440 employees and their spouses during the period of 2016 to 2018. WHO stepwise questionnaire was used to collect data and biomedical samples were taken for predicting the 10-year cardiovascular risk by Cox regression model and multivariate logistic regression was run to determine the key factors associated with both Hypertension (HTN) classifiers. The data were coded and analyzed by SPSS 16.0 version.

Results: Overall HTN prevalence was 32.27%, male with 37.8% and female with 25.2% by previous HTN classifier. Whereas the updated classifier showed an overall prevalence of 61.81%, male with 67.1% and female with 55%. The findings showed a huge difference of 29.54% with $p < 0.001$ between the two prevalence of previous and updated blood pressure classification. Employees had a relatively high HTN prevalence of 35.92% to 65.18%, compared to the spouses with 26.47% to 56.47%, $p < 0.001$ by previous and updated classification, respectively.

Conclusions: The relatively rise prevalence of the HTN revealed by this study suggests new and combining health promotion tactics, cultural theories to fight this rampant silent killer.



Seroprevalence of brucellosis in different small ruminant husbandry systems and associated risk behaviors in Mali: A cross-sectional study



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Background: In Mali, there are different animal's production systems which have been key driver for interaction between animals and humans which is likely a potential risk for transmission of brucellosis. The objectives of this study were: to (i) identify different small ruminants husbandry systems in Mali; (ii) determine seroprevalence of brucellosis according to the husbandry systems identified; and (iii) identify human risk behaviours.

Methods: A cross-sectional study using cluster sampling was conducted in the Sikasso, Segou and Bamako districts. Blood was collected from 860 small ruminants. The sera obtained were examined using Rose Bengal and cELISA tests paralelly. In addition, 119 breeders were interviewed using a structured questionnaire. The statistical analyses were performed with R software (RStudio-1.0.136). A herd was considered positive if at least one animal in

that herd was positive either to RB or cELISA. Chi-square test was undertaken and it was deemed significant when $p \leq 0.05$.

Results: Agropastoral systems accounted for 43.7% [34.5 - 53.1% (95% CI)] of the systems identified and pastoral systems for 31.1% [22.9 - 40.2% (95% CI)]. Peri-urban and urban farms accounted for 17.6% [11.2 - 25.7% (95% CI)] and 7.5% [3.5 - 13.8% (95% CI)] respectively of the farms. Individual seroprevalence was 4.1% [2.8 - 5.6 % (95% CI)]. Herd seroprevalence was estimated at 25.2% [17.7 - 33.9 % (95% CI)]. Peri-urban farms seem to be more affected 38.1% [18.1- 61.5% (95% CI)], followed by pastoral farms 24.3% [11.7 - 41.1% (95% CI)]. Risk behaviours such as exchange of reproductive bulls (30.2 %), suspension of placentas (31.1 %) in the farms, keeping of females having already aborted (69.7 %) The

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close and prolonged contact (51.2%) with the animals, the consumption of unpasteurized dairy products (26.9 %), assisting females for delivery without any protection (40.3%) are practices identified that can promote the transmission of brucellosis to both animals and humans.

Conclusion: Brucellosis seems to be a problem in all husbandry systems in the studied regions. High seroprevalence and presence of practices provide a possibility of cross transmission between animals and humans.



Partnerships for sustainable cities as options for improving solid waste management in Nairobi city



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Partnerships as enshrined in policies are vital for achieving sustainable cities under Sustainable Development Goals (SDGs). Indeed SDGs recognizes the importance of partnerships in solid waste management (SWM) as a way of developing workable and reliable waste management systems. Solid waste management in Nairobi City continues to be a great challenge, and poor practices threaten environmental and public health. Ineffective waste management in Nairobi City has been linked to inefficient policy implementation and enforcement by different stakeholders. To effectively address the challenge of sustainable waste management in Nairobi City, amalgamation of strategies amongst several segments including stakeholders; private and public sectors (formal and informal), Non-Governmental Organizations (NGOs)

and Communities is important, through partnerships to implement improved policies, in terms of capacity, financial prudence, technical and institutional. The paper seeks to analyze existing policy framework on solid waste management and its effectiveness in addressing SWM in Nairobi City. The study is based on a descriptive research design involved interrogating the stakeholders included in the implementation of the policy frameworks in place. Data was acquired through semi-structured questionnaires administered to 385 respondents and interviews with 10 key informants. The theoretical framework based on Institutional Theory and capacity building theories that expound the gaps in policy implementation and the role of partnerships. Policies in SWM interlinked for sustainable cities.



Stem cell models of lung development and repair



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The lung is in direct contact with the environment which is highly contaminated with microbes and pollutants, the result of which is damage to structural cells. Under these conditions the affected cells must be repaired. Compensation of dying structural cells of lung is done by endogenous progenitor cells. Endogenous stem cells have ability for regeneration damaged epithelium via conformity their function and structure. The capability of the lung precursor cells for repair and development declines with aging, and these cells are not usually enough for relief extensive damages. The objective of exogenous stem cells transplantation (such as embryonic, adults, etc.) and the differentiated lung cells are replacement of the damaged cells. The exogenous stem cells transplantation in animal models has demonstrated, which the cells can be replaced in the lung and developed into the adult phenotypes. Exogenous stem cells-based treatments, have produced a new method for the lung diseases. The stem cell therapy and the use of differentiated lung cells are effective in the repair of damaged lung because the cells can replace the damaged cells and support endogenous renovation and development.

Introduction: The lung is a complex structure with alveoli millions, many airways and wide vascular surface that carry out the gas exchange. The lung is in direct contact with the environment and during normal breathing, the airways transmit large volumes of air, which is highly contaminated with microbes and pollutants but lung has multi-faceted defense mechanisms, which are important for survival (Hogg et al., 2004; MokhberDezfouli et al., 2017). Despite these defensive barriers, respiratory system is vulnerable, the result of which is damage to structural cells. Under these conditions the affected cells must be renewed or die by apoptosis or necrosis. Compensation of dying structural cells of lung is done by endogenous progenitor cells to be improved (Moodley et al., 2011). Repair and regeneration of damaged pulmonary cells are slower compared to other cells in the adult tissues for example intestinal and skin cells. However, the possibility of repairing and regeneration the damaged pulmonary cells occurs after respiratory infection (Barkauskas et al., 2013). So understanding lung regeneration capacity and role of stem cells are extremely important for use of therapeutic.

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The diseases of lung respond differently to the present therapies and their continuation will lead to death. Although diagnosis of timely and rapid and pharmaceutical treatments lead to improvement of early symptoms but the abilities and daily activities of patients are decreased and the disease signs may again reveal in the long term. Also, in some patients, the only option for survival is the lung transplantation while there is the severe shortage in the lung donor (Sueblinvong and Weiss, 2010).

Therefore, further researches should be done on ways, which can increase the lung repair and regeneration and help in the pulmonary diseases treatment. The recent results represent, which the stem cells application can be effective in regeneration and repair of the damaged tissue (Wang et al., 2010). Therefore, one way for treatment of lung diseases is stem cell therapy, which can replace the cells of damaged and endothelial epithelial and support endogenous cells renovation. When the progenitor cells activity of lung is impaired due to damage, replacement of endothelial and epithelial cells is disrupted. This leads to renovation disruption (MokhberDezfouli et al., 2017). The stem cells application can help in replacement of endothelial and epithelial cells after severe damages. Furthermore, the healthy part of the lung can enhance the healing process and prevent fibrosis via the regeneration stimulation and possible mechanisms including immunomodulation and the release of trophic factors (Moodley et al., 2011).

Development of lung: First, the definitive endoderm forms from inner cell mass after gastrulation. Then, the definitive endoderm develops the gut tube and is patterned along the

anterior-posterior and the dorsal-ventral axes via the paracrine signals from the mesoderm (Zorn and Wells, 2009). Nkx2.1+ endoderm buds from the ventral anterior foregut to form the lung sprouts and then causes uniform divergence to develop the respiratory tree. Differentiation of cell continues in the early postnatal period to generate the multiple cell types, which the adult lung develop (Morrisey and Hogan, 2010; SadeghianChaleshtori et al., 2016). For production of pulmonary epithelial cells in vitro should pursue the same development as the fetal lung in the culture medium. So that, the stem cells should be induced to spread the definitive endoderm, followed by the generation of anterior foregut endoderm, and ultimately differentiation into the the lung lineages. The researchers have showed remarkable advance in the development of differentiated lung cells from the stem cells (Roszell et al., 2009; Schmeckebier et al., 2013; Huang et al., 2014; MokhberDezfouli et al., 2019). In the future, more knowledge of normal development of lung may help researchers for prevent from the pulmonary abnormalities.

The lung repair process in damage: The pulmonary repair process after damage is a complex phenomenon. Endogenous stem cells have ability for regeneration damaged epithelium via conformity their function and structure. The examination on airways epithelium repair display that the improvement process of airway epithelium inclusive differentiation, migration of adjacent cells for cover the empty region, the progenitor cells proliferation for repair cell number and the cells differentiation for regeneration the cells function (Kamaruzaman et al., 2013; SadeghianChaleshtori et al., 2020a).

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The airways epithelium after injury, starts the improvement process for repair the blood-air barrier integrity. The cells of ATII differentiate into the cells of ATI that repair the epithelial coverage entirety. Polymorphonuclear leukocytes act until restore the pulmonary damage with secretion of the destructive agents. Meantime, the macrophages and alveolar cells eliminate the compounds of protein from the alveoli and the lung function improve (Saguil A, Fargo, 2012; SadeghianChaleshtori et al., 2020a).

Stem cells and precursor cells: The stem cells can repair the damaged cells location by the internal renewal system (Biehl and Russell, 2009). The potential sources of precursor cells are recognized for the airways and lung epithelium and are distributed into two groups: the stem cells of endogenous and exogenous. The lung is a complex organ with more than forty types of different cell that there are distinct populations of progenitor cells in separate anatomical zones along the respiratory tree (Sueblinvong and Weiss, 2010).

Moreover, the essential role of precursor cells of lung in repairing and regeneration the damage, the epithelial cells reversible phenotype and mucus plays an significant role in the damage repair (Wang et al., 2007). There are the endogenous stem cells types in the airways and lung. The capability of the lung precursor cells

for restore (that is often discussed as the natural regeneration capacity) declines with aging, and these cells are not usually enough for relief extensive damages (SadeghianChaleshtori et al., 2020a). The objective of exogenous stem cells transplantation (such as embryonic, adults, etc.) and the differentiated lung cells are replacement of the dead cells or the damaged cells. The autologous or allogenic stem cells transplantation in animal models has demonstrated, which the cells can be replaced in the lung and developed into the adult phenotypes and as a result, the cellular response enhancement to injury (Kotton et al., 2001; SadeghianChaleshtori et al., 2020a). Exogenous stem cells-based treatments, have produced a new method for the lung diseases such as acute respiratory distress syndrome (Sadeghian Chaleshtori et al., 2020b).

Conclusion: In the future, more knowledge of normal development of lung may help researchers for prevent from the pulmonary abnormalities. The capability of the lung precursor cells for repair and development declines with aging, and these cells are not usually enough for relief extensive damages. The exogenous stem cells transplantation in animal models has demonstrated, which the cells can be replaced in the lung and developed into the adult phenotypes. The stem cell therapy is effective in the repair damaged lung because the cells can replace the damaged cells.



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