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Posters

Kiyomi Sakata et al., J Health Med Informat 2017, 8:4 (Suppl)
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PREVENTIVE EFFECT OF *LACTOCOCCUS LACTIS SUBSP.LACTIS* JCM 5805 YOGURT INTAKE ON INFLUENZA INFECTION AMONG SCHOOL CHILDREN

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Objective: A community-based intervention study was conducted to examine the effect of consumption of JCM 5805 yogurt on influenza incidence rates and the cumulative incidence rates among school children in Iwate Prefecture, Japan.

Methods: School children and their parents in Shizukuishi town were told of the purpose, frequency and duration of JCM 5805 yogurt administration. The number of elementary school children in Shizukuishi town was 780 while that of junior high school students in Shizukuishi town numbered 475. The number of elementary school children in neigh-boring town A was 208 and that of junior high school students in town A was 121. JCM 5805 yogurt was delivered three times a week to all elementary schools and junior high schools in Shizukuishi town from January 16 through March 18, 2015. The incidence rate was calculated every week as the maximum case number divided by the number of school children in each school. The cumulative incidence rate was calculated as the total case number during the period when JCM 5805 yogurt was delivered divided by the number of school children in each school.

Results: JCM 5805 yogurt intake was associated with a two-thirds reduction in influenza incidence rates in Shizukuishi town school children compared with those of town A. Furthermore, the cumulative incidence rates of the elementary school and combined data from the elementary school and junior high school were significantly lower than those of neighbor town A.

Conclusion: JCM 5805 yogurt intake reduced both the incidence rates and cumulative incidence rates of influenza.

Biography

Kiyomi Sakata has his expertise in epidemiology of chronic disease such as CVD, cancer, and osteoporosis and passion in preventing infectious disease such as influenza. He had studied epidemiology at the Epidemiology Research Center, School of Public Health, The University of Texas Houston Health Science Center. Awarded the degree of Master of Public Health in epidemiology for a thesis entitled "Changes in cardiovascular disease risk factors in three Japanese National Surveys 1971-1990" Work supervised by Professor Labarthe. Now he is a professor at the Department of Hygiene and Preventive Medicine, Iwate Medical University School of Medicine in Japan.

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Maria Jose Amaral Salomi et al., J Health Med Informat 2017, 8:4 (Suppl)
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DOCUMENT MANAGEMENT AND PROCESS AUTOMATION IN A PAPERLESS HEALTH INSTITUTION

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Health care management is essential to the financial balance of institutions and to the improvements in patient and organization documental processes. In order to achieve those aims, an important step is to observe the indicators that start to point out positive evidences when using document management and process automation in a health care institution, through Information and Communication Technologies in the e-Health system. The main purpose of this study was to gather data and indices about the issue under study, through a literature review. Analysis of American, European, and Brazilian articles in academic or non-academic health care organizations indicates share and use of patient's data, that can improve applied systems performance; analysis of processes; indicators of quality of provided service and patient's quality of care and safety; diagnosis and prescription of medications and decrease of data information errors, thus achieving level 7 in the Healthcare Informatics Management and Systems Society (HIMSS).

Biography

Maria Salomi has experience in research and training of programs and health applications. The main purpose of this study was to gather data and indicators about health process, through a literature review. She has demonstrated that achieving these goals is important to observe the indicators that begin to point out the positive evidence in the use of document management and process automation in a healthcare institution, through the Information and Communication Technologies in the e-Health system.

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HEALTHCARE ROAD MAP TO MODERNIZATION IN CLOUDS

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This article introduces the design of healthcare road map/forum for healthcare professionals, medical device manufacturers, pharmaceutical companies and average people working together to modernize healthcare based on the modern IT technologies such as cloud computing technologies, elastic search and big data. The software platform allows healthcare professionals, medical device manufacturers, pharmaceutical companies and average people post ideas, real medical cases, solutions, new medical devices and medicines, discuss pros and cons, rate each of them and follow up on the issues and solutions interested. The platform is web based and consists of a web server, NoSQL database and a file server. The platform will be deployed and replicated locally in each of the continents in the private cloud network to achieve high performance, high scalability and reliability.

Biography

Mario Li is a student in the Department of Life Science at Queens University with a great passion for integrating medical research, education with modern technologies especially latest IT cloud computing technology. He is the founder of the Cloud Healthcare Forum. He strongly believes that sharing and exchanging of ideas and knowledge, questioning, reasoning and discussing the existing healthcare system among academia, industries, government, patients and everyone who interested in healthcare all over the world is vital to solve the issues and improve the healthcare system. Working together, we can build modern health care.

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DETERMINATION OF ELEMENTAL CONTENT OF FOUR BULGARIAN MEDICINAL PLANTS BY MEANS OF INSTRUMENTAL NEUTRON ACTIVATION ANALYSIS

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Statement of the Problem: Medicinal plants play a major role both in traditional and conventional medicine due to their natural abundance and variety of beneficial health effects. The wide use of plants brings up a necessity to understand their composition and evaluate the risks and benefits of consumption. Most of the studies dealing with medicinal plants are focused on complex constitutes such as antioxidants, enzymes, volatile oils and others. Unfortunately this trend of research leads to a lack of information regarding the elemental content of the medicinal plants. Elemental content could be crucial in order to understand the health effects of the plants. This is due to the potential presence of two groups of elements: essential elements and toxic elements. Essential elements play a major role in human physiology and must be obtained from diet. The presence of toxic elements, on the other hand, might be hazardous to the consumer and lead to health problems.

The purpose of this Study: In the present work the elemental content of four widely used Bulgarian medicinal plants was studied in order to fill the aforementioned informational gap.

Methodology & Theoretical Orientation: The elemental content of four Bulgarian medicinal plants (Sanguisorba officialis L., Sideritis scardic Griseb, Chamaenerium angustifoliu L., and Tribulus terestris L.) was studied by means of instrumental neutron activation analysis. The studied plants are widely used in traditional Bulgarian medicine and have been reported to display healing properties. Previous information for their elemental composition is scarce.

Findings: The mass fractions of twenty eight elements (Al, As, Au, Ba, Br, Ca, Cd, Cl, Co, Cs, Fe, K, La, Mg, Mn, Mo, Na, Rb, S, Sb, Sc, Sr, Sm, Th, U, V, W, Zn) were determined.

Conclusion & Significance: Among those elements thirteen dietary minerals (Ca, Cl, Co, Fe, K, Mg, Mn, Mo, Na, Ni, S, V, Zn) and four toxic (As, Ba, Cd, Sb) were detected.

Biography

Atanas Vasilev a junior researcher at the Sector of Neutron Activation Analysis and Applied Research at the Frank Laboratory of Neutron Physics of the Joint institute for Nuclear Research in Dubna, Russia. He is an MSci in Biophysics of the Faculty of Physics in Sofia University, Bulgaria. Interest includes Life Sciences, nuclear and related analytical techniques used to study plant medicinal plants, environmental studies and statistics of large arrays of environmental data. Previous professional experience includes Bulgarian Academy of Sciences, Institute of Plant Physiology and Genetics.

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SYNCHRONOUS VIDEO TELEMEDICINE IN LOWER EXTREMITIES CHRONIC ULCERS TREATMENT - RETROSPECTIVE COHORT STUDY

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Introduction: Lower extremity ulcers (LEU) are associated with considerable morbidity and even mortality. Their prevalence may further increase as a result of aging and its limited mobility may present a challenge to the healthcare system. Telemedicine (TM) is often defined as a process of using the information and communication technologies (ICT) to provide a remote health care to the populations where medical specialist's services availability is limited. The aim of the study was to assess the effectiveness of telemedicine video conferencing modality, compared to the usual face-to-face (FTF) treatment of LEU.

Methods: The retrospective cohort study was conducted at Maccabi Health Services Northern District Centers, Israel, and was based on patient's medical records database. Consecutive visits of patients to a wound care specialist for twelve-month observation period during 2015 were reviewed. Statistical analyses of cohort's populations and outcomes in both treatment modalities were performed using $\chi 2$ cross-tabulation, Student's t-test for numerical data, Binary Logistic Regression for confounding effects evaluation. Non-inferiority and equivalence of TM to FTF methods were assessed. Statistical significance of 0.05 was assumed throughout the study. All testing performed using IBM SPSS software, version 22 and WINPEPI, version 11.23.

Results: A final sample of 111 patients was analyzed, telemedicine (n=55) and usual care (n=56), with 593 visits in both cohorts. No significant difference in outcome measures (healing of ulcers) between these cohorts was detected (p=0.823). Nonetheless, TM required lower number of visits compared to FTF treatment (p=0.003). Non-inferiority of TM to FTF was demonstrated within the Δ= 20% range limits.

Conclusions: The study results indicate that Video-Conferencing (VC) based TM may be a feasible and effective method in LEU management.

Biography

Gamus A completed M.Sc. in Electrical Engineering, Certified System Analyst, PhD student on Synchronous Telemedicine applications in Lower Extremities Ulcerations at Tel-Aviv University, Israel. Over 25 years of experience in Telecommunications networks and Information Technologies services design and applications in Health domain. Independent Consultant for Telecommunications and Health services organizations worldwide with over 15 years' in Telemedicine applications design and implementation.

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Elisenda Rull Bes et al., J Health Med Informat 2017, 8:4 (Suppl)
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DEVELOPMENT OF AN E-HEALTH TOOL FOR THE FOLLOW UP OF EARLY DISCHARGE PREMATURE BABIES: E-PREMATUR

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Statement of the Problem: Worldwide, the preterm birth rate is estimated to be about 11 per cent and about 15 million children are born preterm each year. (1, 2) The early NICU discharge has been advocated for selected preterm infants to reduce both the adverse environment of prolonged hospital stay and to encourage earlier parental involvement by empowering parents and reduce the costs of care. (3) But this early discharge need to be complemented with a follow up, in most of the cases with nurse in-home visits (4). Conventional hospital-based post discharge monitoring could be improved in terms of costs and clinical effectiveness by using a telemedicine approach (5). Objective: To inform the development of a web-based and mobile application. We develop a consumer-focused e-health tool, for the follow up of the early discharge of premature babies.

Methodology & Theoretical Orientation: To ensure a patient-centred e-health tool we made interviews with proposed end-users. For the clinical issues, we formed a research team with experienced NICU nurses, neonatologists and allied health professionals. We also count on one IT company for the programing and technical support. This four years' project involves, defining the target audience and needs, software development including validation and testing the algorithm, pilot testing and refinement and end-user testing.

Findings: We made a large review of the literature about interventions for the follow up of the early discharge of premature babies. To ensure the needs of the end-user we made thirteen in-depth interviews to parents of premature babies. The analysis revealed they want to get in touch with an NICU expert, emotional support and an easy use tool. The workshop with nine multidisciplinary health care professionals check the algorithms and parameterization of the alarm system, work on the evidence based health care information as well as verify the needed fields for a correct follow up. The first pilot testing was done by professional's experts in Neonatology; they check the whole tool functionality. The end-user testing was done by twenty-four parents.

Conclusion & Significance: This e-Health program with a patient-centred telematic tool enable the professionals of the Neonatal Intensive Care to establish a follow up program empowering the parents with the premature baby care, without the need of costly and time consuming home visits.

Biography

Elisenda Rull Bes did B.Sc. in Nursing and M.Sc. in Nursing Sciences. PhD student in Nursing Sciences with the thesis titled: e-Health program for the follow up of the early discharge premature babies. Neonatal Intensive Care Unit Nurse since 2008 at Hospital Universitari Quirón, Dexeus. Tutor of students doing Nursing degree at Campus Docent Sant Joan de Déu since 2013. Author of e-Premature and coordinator of the research team.

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OVERVIEW OF THE TECHNICAL CHALLENGES FACED WHEN USING CONSUMER MOBILE BIOSENSORS WITHIN TELEMEDICAL APPLICATIONS

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Over the last years, the use of consumer sensor devices in research and medical care has become increasingly popular. Due to their high acceptance and availability, these devices provide an unprecedented opportunity to collect objective biomedical and behavioral data at no cost continuously for an extended period of time. They are thus ideally suited for telemedicine applications and research under real-life conditions. However, the use of consumer devices also poses several technical challenges. These include the availability of raw sensor data for 3rd-party developers, accessing different types of software interfaces, the reliability and usability of the hardware interface between sensor and mobile device, quality of sensor data and battery-life. Furthermore, a number of data privacy and medical certification issues arise from the difference between producer-intended and actual use of the sensor device. In this poster, these challenges are addressed; evaluated and valid solutions are discussed. For the wearable sensor devices, various quality criteria are introduced based upon which a use case specific catalog of requirements may be written. As an example, we consider the three common use cases of fitness, health and medical applications.

Biography

Galina Ivanova studied Technical Cybernetics and graduated in the specialty Medical Cybernetics and Bionics. She obtained her doctorate in the field of Medical Engineering and Computer Science and worked as a scientist and lecturer at the Technical University of Ilmenau where she founded and led the "NeuroCybernetics Research Group". Subsequently she conducted research at the Humboldt-University of Berlin, at MGH/HST Martinos Center for Biomedical Imaging in Boston and at the Leibnitz Institute in Göttingen. G. Ivanova took over the position as professor for Signal and Information Analysis in the Neurosciences at Humboldt-University Berlin in 2009. Since 2015 she has been leading the Group "Data Science" at the University of Leipzig and is director of the Competence Center "Biomedical Data Science" at the Institute for Applied Informatics at the same university. G. Ivanova focuses her research on the fields of biomedical signal processing, neuroimaging, multimodal data fusion as well as mobile health.

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STUDENTS AND TELEMEDICINE: CONNECTING TECHNOLOGY TO CAMPUS HEALTHCARE

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Statement of the Problem: Students often have limited healthcare options due to a variety of reasons including being impacted by health disparities within an ecological perspective. When higher education universities have more than one primary location, using technology to connect the students (patients) to healthcare is critical. With 17% of our total student population uninsured, selecting a healthcare system that would cast a wide reach throughout the state of Minnesota (USA) was critical. Not only did this effect the quality of lives of our students (patients), it also aimed to decrease ecological problems that existed throughout our population.

Methodology & Theoretical Orientation: An action research approach was taken, which sought to engage the students in the process of selecting a campus wide healthcare system. Qualitative data collection included focus groups and interviews with students.

Findings: The students in this study were very eager to assist with locating a new campus wide healthcare system. Although there were many challenges to finding the appropriate healthcare system, the students were enthusiastic to utilize technology to meet their healthcare needs. They clearly knew what they were seeking in terms of healthcare, and their vision was then brought to life.

Conclusion & Significance: In the end, the university ended up selecting a telemedicine option which addressed the needs of all of our students throughout the state of Minnesota. Without the assistance of technology and telemedicine, our university would not have been able to identify a comprehensive healthcare system that met the needs of all of our students due to the multiple campuses within our university. Telemedicine has been the frontrunner within our campus community and will continue to grow with an increase in utilization and visibility.

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NO DEMONSTRABLE RELATIONSHIP WAS FOUND BETWEEN ALCOHOL DEPENDENCE AND CONCOMITANT DRUG ABUSE AMONGST DETAINEES IN POLICE CUSTODY IN WEST YORKSHIRE, ENGLAND

Remy Bahl[a] and **William P Tormey**[a]
[a]University of Ulster, UK

The behavioural effects of alcohol and drug abuse may lead to arrest by the police. Individuals who abuse one substance may be at risk of developing multiple drug dependencies. Using the forensic records, data were collected on 50 successive subjects detained in police custodies across West Yorkshire, England who gave history of alcohol addiction to a single practitioner. The degree of correlation between alcohol dependency and illicit drug usage was assessed by calculating the Spearman's Rank coefficient. Thirty three subjects in this study did not use any illicit drugs. There was no correlation between alcohol dependency and concomitant drug abuse in this group. Spearman's coefficient was statistically insignificant ($p = 0.230$). Kruskal's Gamma, which is used for comparing ordinal data, also failed to show a significant link between the alcohol and drug group ($p = 0.185$). As the degree of alcohol dependency increased, co-use of other drugs decreased. Conversely as the use of stronger drugs increased, co-use with alcohol and other drugs increased. Alcohol dependency is a distinct disorder. Once alcoholism had set in, the use of other drugs falls. The forensic behavioural patterns linked alcohol with "violent disorder" and Class A drug abuse with "organised crime". This study does not support the contention that most alcohol dependent individuals will also abuse illicit drugs.

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NEUROSCIENCE AND BUSINESS: COGNITIVE TECHNIQUES TO INCREASE EMPLOYEE PERFORMANCE

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Neuroscience is no longer considered science fiction to those in business. The brain can now be mapped through functional MRIs (fMRI). The fMRI has demonstrated that neural pathways continue to develop until a person dies. This has broken the myth that the brain does not change dramatically after a person's twenties. There are three major ways individuals think: detailed oriented, looking at the big picture and looking to the future. Through a literature review of scholarly and practitioner journals, as well as various associations that are conducting neuroscience research there is information that can assist practitioners with practical tips. Neuroscience research has studies that can assist with leadership, teams, finance, negotiations, communication and other soft skills. By applying neuroscience to business, Human Resource professionals and senior leadership have scientific backing for the methods used to advance the business strategic goals. Findings indicate that pushing individuals into different manners of thinking makes them more innovative and creative. Innovation and creativity increase the likelihood of a company's strategic endeavours which drives the company's profitability and sustainability. In 2012, PWC conducted a survey with CEOs and found that almost a quarter felt the employees caused strategic initiatives to be cancelled or delayed; market opportunities to be lost; and employees lacked innovation. With the advances of neuroscience and the understanding of how the brain reacts, this paper provides practical recommendation for senior leaders in the business community to enhance the creativity and innovation of leaders and employees.

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OPEN SOURCE SOFTWARE REUSE IN THE PUBLIC ADMINISTRATION: REGULATIONS AND APPLICATION IN THE ITALIAN HEALTH CARE SETTING

Elena Cardillo[a] and **Elisa Sorrentino**[a]
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Spreading of technological and organizational solutions that allow cost reductions and faster and safer document flow management, helps in making a Public Administration (P.A.) more effective and efficient. In this direction, the choice of an Open Source (OS) approach, based on the use of free software is common and consistent. In fact, only through the availability of source code, it is possible to understand the structure of the program and the logic behind its implementation, and therefore only in this way it is possible to modify in order to achieve real interoperability with other programs used within a P.A. Furthermore, the reuse of OS Software in the P.A. guarantees a greater cost containment and transparency, and independence of the P.A. from a single vendor. In the Italian context, this perspective has been encouraged by a series of regulations and, in particular, by the modifications to art. 68 of the Legislative Decree 82/2005 - "Digital Administration Code" (CAD), all aimed at giving a preferential road to the use of free software. Despite an initial enthusiasm in the application of this law, with the Legislative Decree n. 179/2016, a turnaround has taken place. Given this context, in the present work, we will analyse the benefits of a widespread strategy that encourages the use of OS software for P.A. in the field of digital healthcare and, in particular, in the context of the Italian federated Electronic Health Record systems (FSE), whose functioning is directly linked to the level of interoperability and the degree of security of the sensitive data processed among the different Regional systems. Finally, we will highlight what consequences this legislative transformation may have on P.A. and what the discrepancies with respect to the international address which privileges OS software could be, as verifiable also by the EU Open Source Observatory.

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MEDICAL INFORMATICS AND TELEMEDICINE HOW DIGITAL TECHNOLOGY IS TRANSFORMING HEALTHCARE AND TELEMEDICINE

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Statement of the Problem: current review of the ways in which digital technology and telehealth is changing health and patient care delivery. Connected health, also known as technology enabled care (TEC), involves the convergence of technology, digital media, mobile devices and patient care. It enables patients, care givers and healthcare professionals to access data and information more easily to improve quality of care and outcomes. There is a growing body of research showing that TEC and telemedicine has the potential to transform the delivery of care. TEC not only increases access to care for conditions and population, but also has potential to be a cost-effective solution at a time when demands on healthcare services continue to increase. TEC mHealth opportunities range from the simple, single use with focus on wellness to the complex, integrated solution with predictive analytics for decision support. Many ACO's use complex mHealth solutions to achieve optimal patient management of a specific disease, tracking data across the continuum of patient care and providing telehealth for conditions of care. Individuals increasingly use apps and wearable products to support wellness, diet and consumer directed health.

Benefits of TEC include:

- 60% reduction in paperwork for community nurses
- 29% increase in patient face time by provider
- 2 additional patients seen daily
- 35% reduction in hospital admissions despite these benefits, there have been barrios to adoption and acceptance.

Conclusion: A growing body of evidence shows that telehealth may expand access to services, create cost savings and increase the ability to access timely. However, additional research into telehealth, using larger samples sizes, diverse geographies and a broader range of conditions will assist in understanding full range of benefits and impact policy standards. Future research on TEC may help providers and health systems differentiate and communicate the value of telehealth services to increase adoption.

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DIGITAL NATIVES, PERSONAL LEARNING ENVIRONMENTS, AND THE IMPACT ON THE DELIVERY OF HEALTHCARE

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Fifty years ago, medical information was practically all hardcopy – written on paper --making the transfer of medical information and patient updates tedious and frequently incomplete. In today's digital world, most healthcare systems have switched (or plan on switching) to digital medical records, which provide real-time updates and greater accuracy. Along with this rapidly changing digital medical information environment, younger generations, such as Gen-Y (Millennials), and Gen Z (Post-Millennials) are quickly finding their place in healthcare. Having grown up without knowledge of the pre-digital age, these healthcare workers learn differently. Referred to as "Digital Natives," or "Data Natives," these younger people will shape the future of healthcare delivery. The introduction of Personal Learning Environments in Education was in response to how these younger students learn. With greater skills and knowledge of web 2.0 applications, including social networking and online collaboration, the digital natives work together to accomplish their shared goals. As they enter the healthcare market, Personal Learning Environments are finding its place in the training of healthcare professionals. Not only does this enhance the overall learning of these students, but these digital natives are beginning to learn how to conceptualize and visualize big data and may be able to develop the skills and tools needed to apply this knowledge to the enhanced delivery of healthcare in the real world. Discussion and considerations of supporting Personal Learning Environments in healthcare training are made with the hope of preparing the "digital immigrants" for what is coming.

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BARRIERS AND BENEFITS: THE PERCEPTION OF SMARTPHONE USERS ON THE INTENTION TO USE MHEALTH

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Statement of the Problem: The use of mobile computing and communication technologies in health care and public health called mHealth could greatly improve health-care delivery processes and bring benefits to the people. It has been regarded as best tools for curing diseases and improving health condition. However, there is a limited research that looking at the perception of users towards mHealth from the benefits and barriers perspectives. The aim of this study is to explore the perception of Malaysians on the intention to use mHealth whether the usage of it will be a barrier or benefit to them.

Methodology & Theoretical Orientation: This quantitative study randomly recruited four hundred eighty respondents who were smartphone users in the six states in Malaysia include Kelantan, Penang, Selangor, Johore, Sabah and Sarawak using purposive sampling. Survey method and a questionnaire were used as a tool for data collection. Consent were obtained from participants before starting the survey.

Findings: Findings indicate that both perceived barrier and perceived benefits are positively and significantly correlated with intention to use. However, among the two independent variables, only perceived benefits significantly predict respondents' intention to use.

Conclusion & Significance: In conclusion, study suggests that people are ready to use the mHealth technology when they feel the technology can benefit them. Researchers, educators and healthcare providers need to educate the people especially non-user about this technology and encourage them to use it regularly in their daily routine.

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NETWORK SCIENCE IN DISASTER AND PUBLIC HEALTH PREPAREDNESS

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Network science provides us with theoretical and methodological foundations drawn from physics, graph theory, sociology and social psychology to make sense of various complex systems in disaster and public health preparedness. Disaster and public health preparedness is a collective action conducted by a group of individuals and organizations, in which information and communication flow from multi levels becomes critical to the functioning of the complex systems. Awareness of locally situated knowledge and shared understanding of disasters among public and hierarchical governing systems can be instrumental in supporting decision making, early warning and outbreak detection. Network science enables us to analyze the underlying structures and model the dynamics of networks representative of real-world systems in disasters. From this, we can examine the effectiveness of disaster management, monitor public awareness, achieve early recognition of disaster occurrence, and enhance the robustness of response systems. Data availability provided by digital evolution can further promote the study of large scale network in disaster at local and global level. Our proposition is here to suggest effective strategies using network science to study social and organizational systems at play in disaster preparedness and response. In our presentation, we will discuss a series of work related to modelling social systems for detecting early warning signs, improving our understanding of locally situated information of disaster affected areas, and supporting communication and collaboration across public and hierarchical governing systems.

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PREMATURE VENTRICULAR CONTRACTION (PVC) CAUSED BY DISTURBANCES IN CALCIUM AND POTASSIUM CONCENTRATIONS: A STUDY USING ARTIFICIAL NEURAL NETWORKS

Julio Cesar Dillinger Conway[a] and **Jadson Claudio Belchior**[b]
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Statement of the Problem: Abnormalities in the concentrations of metallic ions such as calcium and potassium can, in principle, lead to cardiac arrhythmias. Unbalance of these ions can alter the electrocardiogram (ECG) signal. Changes in the morphology of the ECG signal can occur due to changes in potassium concentration, and shortening or extension of this signal can occur due to calcium excess or deficiency, respectively. The determination of this disorders in a conventional manner may require a long and thorough analysis of the ECG signal and specific blood tests. Besides, the diagnosis of these disorders can be complicated, making the modeling of such a system complex.

Methodology & Theoretical Orientation: An Artificial Neural Network (ANN) was utilized to model the relationships between disturbances in calcium and potassium concentrations and the morphology of the ECG signal and also for pattern recognition of an ECG signal of an individual. The procedure can be, in principle, used to identify changes in the morphology of the ECG signal due to alterations in calcium and potassium concentrations. An arrhythmia database of a widely used experimental data was considered to simulate different ECG signals and for training and validation of the methodology.

Findings: The proposed approach can recognize premature ventricular contractions (PVC) arrhythmias, and tests were performed on ECG data of 47 individuals, showing significant quantitative results, on average, with 94% of confidence. The model was also able to detect ions changes and showed qualitative indications of what ion is affecting the ECG.

Conclusion & Significance: These results indicate that the method can be efficiently applied to detect arrhythmias as well as to identify ions that may contribute to the development of cardiac arrhythmias. Accordingly, the actual approach might be used as an alternative tool for complex studies involving modifications in the morphology of the ECG signal associated with ionic changes.

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INFORMATION TECHNOLOGY FOR DIAGNOSTICS AND MANAGEMENT OF PERSONAL HEALTH

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Statement of the Problem: The main source of health of the person - healthy life style (HLS). Modern information technology can help to personalize and optimize HLS, raising it to the level of HLS-HiTech. Main indicators of person health its physical and mental working ability.

Major factors of ensuring health: physical activity and proper nutrition. Also such indicators of person viability as his biological age and risk of death are important for integrated assessment.

Results: For assessment and optimum control of above-mentioned indicators and factors of health we created the computer system consisting of a number of autonomous modules. The Risk module - for assessment of general risk of death of the person in the next 10 years. The Bioage module - for biological age assessment for an organism and its separate systems. The Physical Working Capacity module - for determination of level of physical reserves and personal optimization of the program of their increase. The Mental Performance module - for testing the main characteristics of cognitive and sensorimotor human abilities and for optimization of the schedule of the intellectual work. The Healthy Food module - for nutrition quality estimation and diet optimization. The Stress module - to estimate stress level and to choice means to its reduction. Input data for these modules are results of questioning and simple functional tests.

Conclusion & Significance: The created modules are the basis of currently developed Internet system of personalized healthcare support. The system is recommended for individual and family application. In general, the developed tools allow to raise HLS to HLS-HiTech level. The system can be useful not only at personal, but also at the population level. For example, it was used to optimize the food basket of Russia.

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ONE MILLION ENROLLMENTS IN ELEARNING AND DISTANT LEARNING COURSES: OPEN UNIVERSITY OF THE NATIONAL HEALTH SYSTEM OF BRAZIL (UNASUS)

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Background: Distance Learning Education in Health Field is growing and new challenges are presented to reach health professionals working in remote areas.

Introduction: The Open University of the Unified Health System (UNA- SUS) promotes continuous health education based on the principles of distance learning to Brazilian health workforce, mainly primary care.

Materials and Methods: We performed a descriptive analysis from all enrollments in UNA-SUS distinguishing Professional Qualification and Specialization courses. Data was collected directly from UNA-SUS information system, from 2008 to 2017.

Results: From 2008 to nowadays, UNA-SUS had 936,746 enrollments in 21 Specialization and 90 Qualification Courses, reaching 485,731 professionals (mean of 1.92 courses per alumnus), distributed in 5,431 Brazilian municipalities, 62% of them with a population of 10,000 to 50,000 inhabitants. Alumni were mainly women (78.4%), nurses (24.18%), working in primary care (37.31%) Conclusion rates were 80,1% for Specialization courses, with 65% graduated and 15,1% failed. Conclusion rates for open online courses where 28,9%.

Discussion: Reaching 96% of all Brazilian cities and 485,731 alumni, UNA-SUS was capable to deliver health education to countryside and to other health professional´s shortage areas, such as indigenous districts and metropolis outstirts. UNA-SUS succeeded in expanding tenfold specialization seats for family health and have good results in e-learning qualification courses.

Conclusions: UNA-SUS has innovated continuous education to health professionals in Brazil. Courses seem to have responded the previous unattended educational needs of the workforce, mainly due to reaching primary care professionals in smaller towns and remote areas, consolidating itself as a nationwide continuous education provider.

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HPLC ANALYSIS OF PHENOLICS COMPOUNDS AND ANTIOXIDANT CAPACITY OF LEAVES OF *ANABASIS ARTICULATA*, AN ALGERIAN MEDICINAL PLANT

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Anabasis articulata is Saharan plants, widely used by Algerian traditional medicine practitioners for their medicinal properties. The antioxidant capacity of fractions and crude extract from the leaves of *A. articulata* were determined in this study through the capacity to remove reactive species and phenolic compounds were quantified in the various fractions. The IC50 (DPPH) ranged from 17.31 ± 0.34 to 39.21 ± 2.38. Results showed that water extract exhibit a higher level of phenolic compounds (742.6± 0.88) as compared to ethyl acetate extract (27.63 ± 5.13).All extracts showed different levels of antioxidant properties in the test models used. Compounds quantified by HPLC in the crude extract and fractions were ascorbic acid and caffeic acids. Results obtained indicated that *A. articulata* exhibits good potential to prevent diseases and it might also be used as a potential source of natural antioxidant agents.

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ICT AND THE FUTURE OF HEALTHCARE: RESULTS OF A MULTI-SCENARIO DELPHI SURVEY

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Background: As far-reaching effect of the digital revolution, telehealth concepts referring to the delivery of healthcare services at a distance using Information and Communication Technology (ICT) are inevitable innovations for modern healthcare provision. Designing ICT-based solutions for medical purposes constitute an emerging field of activity for medical informatics and related scientific disciplines. Technological advances towards consumer-specific expectations require a sustained commitment and coordination across diverse policy and decision makers. The present scenario-based study aimed at identifying prevailing perceptions regarding telehealth applications among Austrian healthcare experts.

Methods: During a 2-round online Delphi survey, panelists rated perceived benefits, obstacles, innovativeness, desirability, and estimated implementation date of ten telehealth scenarios. These scenarios described possible outcomes of societal and IT development processes categorized into the three main topics doctor-patient communication, health promotion, and pervasive healthcare monitoring.

Results: Panelists (n=73, 74% males) perceived that the implementation of telehealth scenarios could especially improve patients` knowledge, quality of social healthcare, and living standard. In contrast, the three top-ranked obstacles were costs, technical prerequisites, and data security. Survey participants rated innovativeness of the presented future scenarios as quite high, whereas perceived desirability was moderate. Overall, ratings suggested precautious attitudes towards technological innovations and remarkable inter-group differences.

Conclusion & Significance: It is evident that on-going technological achievements impact all levels of the complex healthcare environment. So, successful telehealth adoption presents multidimensional and inter-professional challenges, depending explicitly on human-related, social and institutional factors. The survey findings suggest building taskforces and using workshops for enhancement of communication between healthcare stakeholders to proactively shape the future of telehealth in Austria.

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'BEATLEMANIA' AND MASS HYSTERIA – STILL A MUCH NEGLECTED RESEARCH PHENOMENON

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Pointers from a study of crowd behavior and audience arousal were re-visited in 2014, following an inquiry from a journalist in London about the interviews the author conducted 50 years earlier with John Lennon during the Beatles' visit to New Zealand. Interviews with Lennon, direct observation of crowd behavior, and psychometric testing of target groups had led to the elimination of clinical hysteria and delinquent proclivities as key elements of the extraordinary social rumpus. Rather, youngsters still at the immature stage of personality development were primarily those who broke conventions. The study attracted widespread attention at the time, with the editors of two leading journals declaring solemnly that more studies of the kind should be conducted. However, no other researcher heeded the call: hence the one mentioned here remains the first and only data-based study of audience arousal on record.

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