1. **Martina Fojtíková**

PROMOTION OF CERVICAL CANCER SCREENING

Introduction

Organized cervical cancer screening proved to be an effective tool of health prevention. The main reason is that regular preventive examinations enable the detection of the disease in its early stage, when its curability is high. Moreover, a specific development of the illness provides the opportunity to diagnose precancerous lesions, in other words, altered cells can be indicated and treated before their progression to the invasive disease stage. Systematic screening, therefore, decreases the number of incidents and mortality rates associated with cervical cancer.

The American Cancer Society states that number of deaths caused by cervical cancer declined by 74% between 1955 and 1992. The main reason for this change was the adoption of Papanicolaou's cervical smear (Pap smear) test and its use in population screening.[1] Furthermore, most European countries registered a significant decrease in cervical cancer mortality after the implementation of organized screening. According to the age range of the target population and the proportion of screening coverage mortality, decreased by 10 to 80%. [2]

Even though cervical cancer mortality is highly preventable [3] and screening programs have been widely introduced, incidence and mortality still could be lower. Age adjusted incidence and mortality for cervical carcinoma was as high as 8,1 and 2,4, respectively, in the USA in 2004. Age-standardized incidence within European Union countries ranges from 4,7 in Finland to 18,6 in Slovenia.[4] Standardized average incidence and mortality rates was 10,7 and 3,5 respectively in EU states.[4]

In the Czech Republic, the screening program is established by the law. Annual preventive gynecological examinations are not compulsory but they are fully covered by public health insurance for all women from 15 years of age (with no upper limitation). The preventive examination comprise Pap smears and colposcopy.[5] In spite of the presence of screening programs, there are a significant number of women who fail to follow the recommendations and do not have their Pap smear test for over 5 years. Moreover, the Czech Republic continues to have a somewhathigh incidence and mortality rate in comparison with other European countries reaching up to 18,0 and 5,8, respectively, in 2004.[6]

OVERALL: focus on definite article and register

The text is a part of an introduction to an article with structure: introduction, methods, results and discussion. Citation style: AMA.

2. Zuzana Rakovska

Source of the text: Statement of Motivation and Research Description Essay written for doctoral audition (I am in the 1st year of doctoral studies).

Expected Methodology

In order to conduct a comprehensive analysis of the topic, I would require a solid set of observations capturing investors' decision-making. Available literature on the issue offers two possible directions. The first one considers a study of the market data including prices, stock returns, volatility or other financial indicators that indirectly reflect investors' behaviors1. Taking the study of home bias as an example, such an approach can be found in French & Poterba (1991) who use expected returns in their study of incomplete international diversification. Alternatively, Barberis et al. (2001) employ NYSE stock prices in order to prove evidence from historical data favoring the hypothesis arising from prospect theory. Although, this direction offers solid literature background, it is possible that the financial data from Czech environment might not be available, or would be insufficient. This risk cannot be assessed before the actual study of the datasets commences.

The second possible direction of research methodology is the experimental one. Such an approach applies real observations of group of human subjects who are faced with different circumstances under which they are forced to make decisions. A group of finance students might be considered an example. Camerer & Lovallo (1999) used the experimental approach to study the overconfidence of investors, while Kahneman et al. (1991) in their study examine the endowment effect, and status quo bias. It is important to state that the approach heavily relies on the correct selection of an experimental group which might not be available at the time the study starts.

To sum up, both proposed variants of methodology offer interesting possibilities for academic research. However, each of them exhibit shortcomings connected to data availability. Since the second approach bears the risk of not sourcing the proper experimental group, the first one offers the possibility to use data from another country in cases where the Czech data is irrelevant. Therefore, I expect that the application of the first variant would be more feasible. Nevertheless, at this point in time, I would like to present both of them as expected leaving behind the assumptions on possible drawbacks.

1Expected data source is Bloomberg which is available to students studying at the Faculty of Economics and Administration, Masaryk University.

OVERALL: Well-formulated sentences & effective overall command of the language. Articles & prepositions need work

3. Veronika Nezhybová

Abstract of a paper called “Metazoan parasites of African annual killifish (Nothobranchiidae): abundance, diversity and their environmental correlates” for biological journal Biotropica

Annual killifish of the genus *Nothobranchius* inhabit annually desiccating pools across the African savannah and survive the dry period as developmentally arrested embryos. Their discontinuous, non-overlapping generations make for unique predictions regarding their natural parasite fauna that has not been documented to date. Here, we investigate the relationship between global (climate, altitude) and local (pool size, vegetation, host density and diversity, diversity of potential intermediate hosts) environmental factors and killifish parasite community structure. We examined metazoan parasites from 21 populations of four species of genus *Nothobranchius* (*Nothobranchius orthonotus*, *N. furzeri*, *N. kadleci* and *N. pienaari*) across a gradient of aridity in southern and central Mozambique. Seventeen parasite taxa were recorded in total, with trematode larval stages (metacercariae) being the most abundant taxa in killifish parasite communities. The parasites recorded were both allogenic (i.e. life cycle includes non-aquatic host; predominantly trematodes) and autogenic (i.e. cycling only in aquatic hosts; all nematodes found). Parasite abundance was highest in climatic regions with intermediate aridity, while parasite diversity was associated with local environmental characteristics and positively correlated with fish species diversity. Our results suggest that parasite communities of sympatric species of *Nothobranchius* fish are similar and dominated by larval stages of generalist parasites. These killifish therefore serve as important intermediate or paratenic hosts of parasites, with piscivorous birds and predatory fish being their most likely definitive hosts.

4. Monika Stankova

Volumetric analysis versus response evaluation criteria in solid tumors and modified response evaluation criteria in solid tumors in the evaluation of HCC after transareterial chemoembolization

Purpose: To compare volumetric analysis with the standard criteria - response evaluation criteria in solid tumors (RECIST) and modified response evaluation criteria in solid tumors (mRECIST) - for the evaluation of HCC and its response to transareterial chemoembolization (TACE).

Material and methods: The total of 40 patients treated in the University Hospital Brno with HCC were included in this study. All of them underwent TACE and their tumor range was evaluated on the CT/MR input and output. A volumetric analysis was performed semiautomatically. The survival of the patients was evaluated on the date of the first chemoembolization. Their overal survival was evaluated by the Kaplan-Meier method and the differences in survival by the log-rank test.

Results: The strongest correlation has been proven between the length of survival and determination of the viable part of a tumor using volumetric analysis and between the length of survival and the ratio viable/noviable parts of the tumor. The median of survival since the first performed TACE is 15,0 months.

RECIST and mRECIST have not been proven as a statistically significant factor of correlation with the overall survival.

Conclusion: Volumetric analysis was statistically proven as the strongest factor of the correlation with the length of the survival of the patients, contrary to RECIST and mRECIST. It is a convenient way to evaluate the response of HCC to treatment, particularly in complex tumors after TACE.

This abstract was written for an international congress of The European Society of Gastrointestinal and Abdominal Radiology (ESGAR). The research will be presented in 12 minutes Power-Point presentation.

5. Barbora Pijáková

Frost Formation Mechanisms for Water Droplets on Hydrophobic Surfaces

Abstract

Superhydrophobicity of functional surfaces is frequently observed as an additional value for possible surface protection from ice adhesion during low temperatures. The mechanism of ice nucleation is influenced by aspects connected to surface material, environmental conditions and water volume.

The aim of this work is to show two different possibilities of microdroplet freezing modes strictly dependent on water contact angle, cooling rate and droplet volume. Cooling experiments were managed by decreasing the substrate temperature using Peltier element and the simultaneous recording of contact angle and change of climatic conditions in time at atmospheric pressure.

The formation of ice in the whole volume of droplets predominated for surfaces with low contact angle (up to 120°), very slow or quick cooling (replaced by concrete values) varies for different wettability. Optimizing the moderate cooling rate in relation to droplet volume for highly hydrophobic surfaces caused dominant surface-to-volume freezing, consisting of surface ice layer creation previous to nucleation in volume.

The restriction of conditions for both mechanisms completes the understanding of freezing processes on potential superhydrophobic ice protectors and indicates the different behaviour of water droplets in various applications such as aircraft or the shipping industry.

6. Pavel Doubek

Current issues of involuntary medical intervention into the physical integrity of a patient

(Abstract of an article that I will present at the international conference. The paper will be also included into the conference journal).

The aim of this article is to highlight the current issues of involuntary medical treatment from the perspective of the fundamental right to the inviolability of the physical integrity of the patient. The core of this article is the analysis of the „public interests" which justify or in the past justified medical intervention into the physical integrity of patients without their consent. In what follows, I will address many questions relating to so called „hard cases"[1] in medicine. I am going to ask, for example, whether the eugenic or social ideas in medicine are long time passé or whether they are still alive.

When analysing these issues, I also intend to dicsuss some related issues like the criterion of medical necessity, the aspect of informed consent, coercion, paternalism in health care, etc. I will support my analysis and ideas with ECHR case law, international human rights law and also with standards, reports of international monitoring bodies, as well as other sources of international soft-law. The aim of this article is to explore what reasons currently justify involuntary medical interventions and whether these reasons are of a therapeutic nature, or rather reflect a social need. At the onset, let me ask another basic question: Is the patient the only one who makes decisions about his body and life, or even in 21th century, does the State know better?

7. Stanislava Kováčová

The abstract was written one year ago as a summary of a theoretical article for the inaugural issue of the Electronic Journal of Central European Studies in Japan.

Abstract

This paper first highlights the importance of dealing with the methods of prejudice reduction in Central Europe in an era of globalization. It then summarizes the most important findings of the intergroup contact research, which show that contact between groups of people improves intergroup attitudes. The paper reviews the history of the development of the Contact Hypothesis and separate research on direct and indirect intergroup contact. The former is a face-to-face interaction with an outgroup member. The latter, on the other hand, improves attitudes by having, observing or imagining an ingroup friend who meets with an outgroup friend. Indirect contact includes a) extended contact: learning that an ingroup member has a friend from the outgroup, b) vicarious contact: observing an ingroup member interacting with an outgroup

[1] The term „hard case" referes to cases in law, that can not be easily solved by simple application of legal norm, but we have to use various interpretative tools and use legal principles. The solution of the hard case has not to have only one right answer. Pleas see more in: PATTERSON, Denis. Law and Truth. Oxford: Oxford University Press. 1996, p. 88.

member, c) parasocial contact: observing an interaction between an ingroup and outgroup member through different kinds of media; and d) imagined contact: imagining oneself interacting with an outgroup member. Finally, the article presents examples of successful applications of the contact theory in multicultural settings.

Key words: intergroup contact, prejudice reduction, globalization

8. Matěj

Despite advances in the treatment of invasive fungal diseases (IFD), mortality rates remain high. Moreover, due to the expanding spectrum of causative agents, fast and accurate pathogen identification has become necessary.

We designed a panfungal PCR which targets the highly variable ITS2 region of rDNA genes and uses high resolution melting analysis (HRM) for subsequent species identification. The sensitivity and specificity of this method was tested on a broad spectrum of the most clinically important fungal pathogens,including *Aspergillus* spp., *Candida* spp., and mucormycetes. Despite the fact that fluid from bronchoalveolar lavage (BAL) is one of the most frequently tested materials there is a lack of literature and sources aimed at panfungal PCR as an IFD diagnostic tool from BAL samples. The applicability of this method in routine practice was evaluated on 104 BAL samples from immunocompromised patients.

Due to high ITS region variability, we obtained divergent melting peaks for different fungal species. Thirteen out of 18 patients with proven or probable IFD were positive. Therefore, the sensitivity, specificity, positive predictive value and negative predictive value of our method were 67 %, 100 %, 100 % and 94 %, respectively.

In our assay, identification of fungal pathogens is based on HRM, therefore omitting the expensive and time consuming sequencing step. With the high specificity, positive and negative predictive values, short time needed to obtain a result, and low price, the presented assay is intended to be used as a quick screening method for patients at risk of IFD.

9. Ivana Šplíchalová

Assessing mechanisms of fractures in relation to skeletal morphology of hyoid bones

In the field of forensic sciences, the hyoid bone provides important evidence of a victim's biological profile (e.g., sex, ancestry, age at death) or cause of death. Fractures of the hyoid bone may indicate accidental traumas (e.g., car accidents, falls), self-inflicted (e.g., hanging) or assaulted (e.g., manual or ligature strangulation) injuries. In addition, postmortem hyoid fractures which often occur when a larynx is being harvested and examined at autopsy may easily lead to misdiagnoses. Based on a sample of 500 complete and fractured hyoid bones accompanied by autopsy reports, hyoid morphology presented by 3D digital models was non-invasively quantified by means of traditional and geometric morphometrics, mesh-based processing and multivariate statistics. Computer-aided mesh-to-mesh comparison may serve as a new approach to examine the morphology of fractured hyoid bones combined with an individual´s biology and circumstances of death. In the present paper, the approach yielded statistically significant differences between morphology of the hyoid bone and an individual´s sex, age at death and mechanism of damage. The Principal Coordinate Analysis showed that the chances of post-mortem damage increase with steeply sloping greater horns and their vertical flattering. As for peri-mortem damage, spreading of the greater horns in fractured bones is heading forward and superior featured with the present horizontal flattering. Yet, predictive models for the diagnosis of hyoid fractures failed to provide a classification rate which would meet the requirements for an accurate and reliable technique applicable in forensic pathology, traumatology or anthropology.

** note: for this moment, the results are temporary, most of them are still processing*

10. Natalia Neuwirthová

Title: Currently used pesticides in soil: their fate and risks from the perspective of the total concentration based and the bioavailability approach

Pesticides used in agriculture represent one of the largest inputs of chemicals to soil. Nowadays, risk assessment associated with the presence of a chemical in soil is based on the total concentration. Although evidence has been collected that total soil concentration does not properly reflect the environmental risks as it does not allow the factor of bioavailability/bioaccessibility to be considered. In this study, we measured the total concentrations of pesticides in soil with their bioaccessible concentrations by three non-exhaustive extraction techniques using sorbents (namely XAD, silicon rubber and Empore disk) operating under infinite sink conditions. After the optimization of the extraction time and sorbent amount, soils which had either natural occurring residues or were spiked to desired concentrations were exposed to the above mentioned sorbents. Data on the total amounts and bioaccessible fractions were compared over a range of pesticides (including non-polar, polar and ionizable currently used pesticides) and soils with varying physico-chemical properties.

11. Markéta Sedláková, Masaryk University, Faculty of Education, Brno, Czech Republic

Discourse Analysis in Social Educational Research

Abstract:

This paper presents a proposal for social education research that is included in the dissertation of the author. The author's research leanings draw from social constructionist and post-structural approaches. These approaches form the framework that binds not only the conception of the research, but also the overall viewpoint and approach of the researcher. The author has focused her research activities on the everyday knowledge of immigrants as representatives of a socially disadvantaged group in the Czech educational milieu. The term immigrants is narrowed down to focus on adherents of Islam. Contemporary educational practice must reflect current sociocultural problems and the diverse environments from which social actors—students and their teachers—come. Multiculturality alongside classroom education have become topics that affect society-wide discourse. Deconstructing commonly widespread “knowledge” that may produce stereotypical, racist, or xenophobic tendencies in society appears to be one of the possible paths to harmonizing the coexistence of all social/ethnic groups. Considering the diversity of the issue, the use of discourse analysis in the research is proposed. Semi-structured interviews will be used to acquire data. Discourse analysis is a theoretical research approach that is able to critically reflect on behavior and the practices of a particular discourse. Ideally, the results of such an analysis should lead to change in a given situation. The purpose of this analysis is to capture the often unreflected aspects of everyday life that implicitly affect the course of lifelong educational processes. A minor objective is to map intercultural conflicts on the basis of everyday knowledge. A research report will present any possible conclusions that can be applied in informal and multicultural education practice. The use of discursive approaches in social pedagogy opens the door to studying the construction of meaning in various discursive worlds (religious, political, cultural, and everyday worlds). Peaking under the hood of different discursive contexts eliminates mutual misunderstandings of the subjective constructs of individual actors in social reality and supports tolerance. This seems to be something important in light of the multiculturality of today's world.

12. Hana Dvořáková

Abstract from a paper intended for the conference proceedings. Maximum length was 100 words.

Plasma treatment of polymers is frequently used for increasing surface energy in order to improve wettability and adhesion properties. In this paper, the correlation between surface energy of plasma modified polyethylene and its surface chemical composition and surface roughness was studied. High density polyethylene was treated using Diffuse Coplanar Surface Barrier Discharge in ambient air. Surface energy was estimated using sessile drop contact angle measurement and changes in chemical composition were analysed via X-ray photoelectron spectroscopy. The surface roughness was investigated using atomic force microscopy and was characterized in terms of mean roughness (Ra).

13. Martin Caletka

ACCURACY OF FLOOD INUNDATION DELINEATED BY MODEL AIZM

The AIZM model is an alternative tool for the delineation of flood extents based on water levels. The model consists of several sub-models in ESRI ArcGIS ModelBuilder located in the ArcToolbox. The input data includes polyline of a stream, depths of water and digital elevation model. Considering the absence of hydraulics, certain deficiency has to be taken into account.

The presented study summarizes the results of the analysis on the accuracy of flood inundations delineated by the AIZM model, based on the comparison with reference flood inundations. For 30 river reaches in the Czech Republic, the relation of different fluvial characteristics on the accuracy is investigated. The comparision is carried out with respect to various return periods of designed flood event, as well as different DEM acquired by airborne laser scanning. Thus, the generally favourable characteristics of river reaches can be distinguished from the perspective of accurate model outputs obtained.

14. Jan Rosecky

Towards Discovering the Limits of Smart Grid AMM Communication Infrastructure

1. Introduction

As energy distribution grids are currently undergoing massive transformations, power distributors are facing long-term investment dilemmas. A wide range of suppliers are offering their advanced metering and monitoring (AMM) solutions in terms of metering and sensor hardware, data harvesting systems, supportive communication infrastructure, and more. Setting up a set of requirements posed onto each of these components and comprehending the behavior of individual technologies in a large-scale setup is a vital part of the smart grid design process and cannot be simply copied from an existing solution.

On-field experiments ... show that communication forms a great bottleneck in many smart metering installations. Since stable and fast optical fibers are rather expensive to install everywhere and hard to maintain, two main approaches involve wireless cellular networks and power-line communication (PLC). Cellular networks can be easily ...ref... be overloaded by multiple simultaneous connections to the same cell, moreover, solutions from public operators, often without dedicated QoS, suffer lower stability caused by other participants. Quality of PLC, on the other hand, is very dependent on the grid topology, power line load, power line type, number of repeater "hops" and external disturbances. ... Generally speaking, theoretical speeds achievable in laboratory conditions hardly ever meet the reality.

Here, we present an approach to analyze the limits of communication infrastructures used in large-scale smart grid applications via simulations, via modeling the information ows according to metering and reading processes, as well as detailed communication network topology and disturbances and Preprint

 individual device setup. Unlike most approaches, we focus on end-to-end data delivery and data-collection process KPIs.

2. Background

The common approach to smart grid communication infrastructures divides the data transmission into 3 parts: the Home area network (HaN), which is the communication platform used by smart meters, smart appliances, home production and power storage facilities. The Neighborhood area network (NaN), which supports data exchange between local smart meters and intelligent agents, enabling the incorporation of distributed intelligence into the grid. Localities are often delimited as areas fed by a single secondary substation. Distributors' agents in the localities are referred-to as gateways or data concentrators [? ?], often placed on the substations and primarily designed to pass measured data to distributors' central systems [?]. This data exchange is already a part of wide area network (WaN). This hierarchy corresponds to "zones" axis of SGAM ... Within the scope of the paper, we primarily focus on the technologies used in NaN and WaN communication. In the Central-European context, cellular networks or high-voltage (HV) PLC will almost certainly be used for WaN, whereas low-voltage (LV) PLCs are considered for NaN.

2.1. Powerline Communication

Powerline communication (PLC) uses electrical wiring to simultaneously carry both data and alternating current. PLC represents the natural way of developing communication infrastructure through/using existing power infrastructure (both low and high voltage). In the scope of central-European networks, it will almost certainly be used for NaN communication. Powerline communication represents a rather noisy channel, whose quality depends on a wide range of factors including the current power load of the wires, and external electromagnetic disturbances or powerline traffic on close wires. For longer distances, signals needs to be amplified, which is why smart meters act as signal repeaters [?] in the majority of existing installations. Several standards are relevant in the central-European area: older narrow-band, BPSK-based Meters-and-More technology [?]; newer narrow-band OFDM-based PRIME, G3 and IEEE-1901.2; and broadband over powerline (BPL) [?]. A number of generic low-level modeling and simulation approaches have been proposed, among others [? ? ? ? ? ? ? ? ?], most concentrating on OFDM, particularly PRIME or G3. While Hoch [?] considers G3 more powerful in his Matlab-simulated comparison with PRIME, experiments set up in [?] proved PRIME technology faster for the scenarios.