



ANDRIJA STAMPAR
TEACHING INSTITUTE
OF PUBLIC HEALTH

Creating a Healthier Future

REVIEW 2020

SCIENTIFIC ARTICLES IN CURRENT CONTENTS



REVIEW 2020

Scientific articles in Current Contents
and other indexed journals

Andrija Stampar Teaching Institute of Public Health

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FOREWORD

The *2020 Review of Scientific articles in Current Contents and other indexed journals* is an annual report of scientific articles published in *Current Contents* journals and other indexed journals by the employees of the Andrija Stampar Teaching Institute of Public Health. The first chapter brings 14 abstracts of original scientific articles and reviews published in *Current Contents* journals (there were 25 such papers in 2019); one article is about COVID-19 in the healthcare facilities of Croatia. There are eight scientific articles published in other indexed journals in the second chapter.

In 2020, there were 54 scientists in the Teaching Institute: 40 with doctoral degrees and 14 with master's degrees. The percentage of female scientists dominates the overall number: 43 female scientists versus 11 male scientists.

Despite many Institute's active roles during the COVID-19 pandemic, research work was continued. Therefore, we congratulate the employees and their external associates for any scientific contribution.

Institute Head
Zvonimir Šostar, MD

1. ORIGINAL SCIENTIFIC AND REVIEW ARTICLES IN CURRENT CONTENTS

1.1. 5-HYDROXYMETHYLFURFURAL AND ACRYLAMIDE CONTENT OF COCOA SHELL TREATED WITH HIGH VOLTAGE ELECTRICAL DISCHARGE

Food Control. 2020;110:107043. Epub 7 December 2019

Impact factor: 4.258

Barišić V¹, Flanjak I¹, Tot A², Budeč M², Benšić M³, Jozinović A¹, Babić J¹, Šubarić D¹, Miličević B¹, Ačkar Đ¹

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Abstract

5-hydroxymethylfurfural (5-HMF) and acrylamide, as products of Maillard's reactions, are present in roasted cocoa shell. Since the cocoa shell is increasingly being researched for use in food enrichment due to high fiber and polyphenols content, it is necessary to solve the problem of components that can be harmful to human health. We evaluated the effect of high voltage electrical discharge (HVED) on colour, moisture, 5-HMF and acrylamide content in cocoa shell obtained after roasting cocoa beans. The effects of concentration, frequency and time of cocoa shell treatment were investigated. HVED proved to be a successful method for reducing the content of acrylamide and 5-HMF. In addition, darkening of samples was observed which could mean that further reactions of those components occurred.

Keywords: cocoa shell, high voltage electrical discharge, 5-HMF, acrylamide

1.2. ASSOCIATION BETWEEN ARSENIC EXPOSURE AND BIOMARKERS OF TYPE 2 DIABETES MELLITUS IN A CROATIAN POPULATION: A COMPARATIVE OBSERVATIONAL PILOT STUDY

Science of the Total Environment. 2020;720:137575. Epub 25 February 2020

Impact factor: 6.551

Lucio M¹, Barbir R², Vučić Lovrenčić M³, Canecki Varžić S^{4,5}, Ljubić S³, Smirčić Duvnjak L³, Šerić V^{4,5}, Milić M², Tariba Lovaković B², Krivohlavek A⁶, Vinković Vrček I², Michalke B¹

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Abstract

Chronic exposure to high inorganic As levels in drinking water has been related to many diseases, including type 2 diabetes mellitus (T2D). The association with low and moderate As levels, however, remains controversial and has yet not been studied in European populations.

This study aimed to investigate possible association between As exposure and biomarkers of T2D in Croatian population. Observation recruited 86 adults from Eastern Croatia, where groundwater is contaminated with inorganic As, and 116

adults from Western Croatia, where As levels in drinking water are low. Both populations were divided in patient groups (T2D or prediabetes) and healthy controls. Exposure was assessed by determining total As in blood and urine and As metabolites in urine.

Eastern Croatian population had a significantly higher content of As in urine than Western, whereas the opposite was true for arsenobetain. Total As and As metabolites in urine positively correlated with hemoglobin A1c (HbA1c) and negatively with albuminuria.

This study provides important preliminary data on the levels of As in urine and blood and their association with biomarkers of T2D in Croatian population exposed to low or moderate levels of As through drinking water as a solid basis for further research of the pathophysiological effects of such As exposure on the status and complications of diabetes.

Keywords: arsenic exposure, biomarkers of T2D, drinking water, type 2 diabetes mellitus

1.3. DEPRESSIVE SYMPTOMS AND ADHERENCE TO PROPHYLAXIS IN PATIENTS WITH HAEMOPHILIA FROM CROATIA AND SLOVENIA

Haemophilia. 2020;26:e161-e167

Impact factor: 2.990

Bago M¹, Butković A², Preložnik Zupan I^{3,4}, Faganel Kotnik B^{3,4}, Prga I¹, Bačić Vrca V^{5,6}, Zupančič Šalek S^{7,8}

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Abstract

Introduction: Adherence to a prophylactic therapy is obligatory to prevent bleeding in patients with haemophilia. It has already been recognized that depression is associated with treatment adherence.

Aim: The aim of this study was to examine the prevalence of depressive symptoms in adults with haemophilia using an instrument designed or validated for diagnosing or screening for depression and to investigate the association of symptoms of depression with non-adherence to prophylactic therapy in patients from two East European countries.

Methods: Adult patients with severe or moderate haemophilia receiving prophylaxis were eligible for the study. Depressive symptoms were assessed with BDI-II, adherence with VERITAS-Pro, demographic and socioeconomic data were collected using a questionnaire, and clinical data were obtained from medical records.

Results: Final sample included 81 participants (median age was 45 years, range 18-73 years). There were 9 (11%) participants with scores on BDI-II above 14 points, the cut-off score for depressive symptomatology. In general, participants were adherent. However, there were 14 (17%) participants who had scores above 57 points, the cut-off score for non-adherence. There was an association between having depressive symptoms and being non-adherent, and depressive symptoms explained additional variance in adherence after controlling for sociodemographic, psychosocial and clinical characteristics.

Conclusion: Since there is an association between depressive symptoms and non-adherence, it would be beneficial for both patients and the public health system for screening for depressive symptoms to be included as a part of the treatment protocol.

Keywords: adherence, haemophilia, symptoms of depression

1.4. EPIDEMIOLOGY OF USUTU VIRUS: THE EUROPEAN SCENARIO

Pathogens. 2020;9(9):699. doi: 10.3390/pathogens9090699

Impact factor: 6.218

Vilibić Čavlek T^{1,2}, Petrović T³, Savić V⁴, Barbić Lj⁵, Tabain I¹, Stevanović V⁵, Klobučar A⁶, Mrzljak A^{2,7}, Ilić M¹, Bogdanić M¹, Benvin I⁵, Santini M⁸, Capak K¹, Monaco F⁹, Listeš E¹⁰, Savini G⁹

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Abstract

Usutu virus (USUV) is an emerging arbovirus isolated in 1959 (Usutu River, Swaziland). Previously restricted to sub-Saharan Africa, the virus was introduced in Europe in 1996. While the USUV has received little attention in Africa, the virus emergence has prompted numerous studies with robust epidemiological surveillance programs in Europe. The natural transmission cycle of USUV involves mosquitoes (vectors) and birds (amplifying hosts) with humans and other

mammals considered incidental (“dead-end”) hosts. In Africa, the virus was isolated in mosquitoes, rodents and birds and serologically detected in horses and dogs. In Europe, USUV was detected in bats, whereas antibodies were found in different animal species (horses, dogs, squirrels, wild boar, deer and lizards). While bird mortalities were not reported in Africa, in Europe USUV was shown to be highly pathogenic for several bird species, especially blackbirds (*Turdus merula*) and great gray owls (*Strix nebulosa*). Furthermore, neurotropism of USUV for humans was reported for the first time in both immunocompromised and immunocompetent patients. Epizootics and genetic diversity of USUV in different bird species as well as detection of the virus in mosquitoes suggest repeated USUV introductions into Europe with endemization in some countries. The zoonotic potential of USUV has been reported in a growing number of human cases. Clinical cases of neuroinvasive disease and USUV fever, as well as seroconversion in blood donors were reported in Europe since 2009. While most USUV strains detected in humans, birds and mosquitoes belong to European USUV lineages, several reports indicate the presence of African lineages as well. Since spreading trends of USUV are likely to continue, continuous multidisciplinary interventions (“One Health” concept) should be conducted for monitoring and prevention of this emerging arboviral infection.

Keywords: Usutu virus, epidemiology, Europe, “One Health”

1.5. EXPOSURE OF THE CROATIAN ADULT POPULATION TO ACRYLAMIDE THROUGH BREAD AND BAKERY PRODUCTS

Food chemistry. 2020;322:126771. Epub 9 April 2020

Impact factor: 6.306

Mandić Andačić I¹, Tot A¹, Ivešić M¹, Krivohlavek A¹, Thirumdas R², Barba JF³, Badanjak Sabolović M⁴, Gajdoš Kljusurić J⁴, Rimac Brnčić S⁴

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Abstract

The aim of the present study was to determine and compare the levels of acrylamide in different types of bread and bakery products using a LC–MS/MS method, before and after the new European regulation on acrylamide reduction (Commission Regulation (EU) 2017/2158) became valid. Also, one of the aim was to estimate the average exposure to acrylamide through this food category. Of the total of 100 analysed samples, acrylamide content ranged from below the limit of quantification (LOQ) to 237 µg/kg in the period before the application of a new European Regulation, and from <LOQ to 42 µg/kg after it's application. For the adult Croatian population the dietary mean exposure to acrylamide in bread and bakery products was estimated at 0.16 µg/kg b.w. per day. The application of the new European Regulation has contributed to food safety in terms of reducing the levels of acrylamide in bread and bakery products.

Keywords: acrylamide, LC/MS/MS, bread, dietary exposure, bakery products, food safety

1.6. HAPTOGLOBIN GENOTYPE 2-2 ASSOCIATED WITH ATHEROSCLEROSIS IN PATIENTS WITH ISCHEMIC STROKE

Gene. 2020;752:144786. Epub 18 May 2020

Impact factor: 2.984

Merkler A¹, Sertić J^{1,2}, Bazina Martinović A¹, Križ T⁴, Miličić I², Šimić M⁴, Caban D¹, Ljubić H¹, Markeljević J³, Šimičević L¹, Kaštelan S⁵, Pećin I^{1,2}, Reiner Ž^{1,2}

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Abstract

Aim: Ischemic stroke (IS) is multifactorial disease and therefore different genes and proteins play a role in its development. Haptoglobin (Hp) removes free haemoglobin and protects from iron-induced oxidative damage, inflammatory response, atherosclerosis and cerebrovascular diseases. The aim of this study was to investigate Hp genetic variants in patients with carotid atherosclerotic lesions and IS.

Material and methods: A total of 121 subjects with IS participated in the study, 81 male and 40 female.

Results: Among 121 patients with IS, 79 had diffuse atherosclerotic plaques and stenosis. Hp genotype was statistically significantly associated with CDFI neck carotid artery stenosis findings ($p = 0.006$). Patients with Hp1-2 genotype had statistically significantly larger odds for atherosclerotic changes compared to those with Hp1-1 genotype, as well as those with Hp2-2 genotype.

Conclusion: This study has shown an association of the Hp2-2 genotype and atherosclerosis in patients with IS, indicating Hp2-2 genotype as a genetic biomarker for precision medicine and personalized healthcare.

Keywords: carotid atherosclerotic lesions, Hp2-2 genotype, stroke

1.7. NURSES' PERCEPTION OF IMPLICIT NURSING CARE RATIONING IN CROATIA—A CROSS-SECTIONAL MULTICENTRE STUDY

Journal of Nursing Management. 2020;28(8):2230-2239

Impact factor 2.243

Friganović A^{1,2}, Režić S^{1,2}, Kurtović B², Vidmanić S³, Zelenikova R⁴, Rotim C^{2,5}, Konjevoda V⁶, Režek B⁷, Piškor S⁸

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Abstract

Aim: To examine Croatian nurses' perception of implicit nursing care rationing and the patient safety culture from the perspective of acute care hospital staff.

Background: In the past three decades, the Croatian health system has undergone numerous transformations driven by geopolitical, legal, financial, demographic, scientific and technological progress. These changes have led to systemic changes in the structure, organisation, financing and delivery of health care, and thus, of nursing care.

Methods: A cross-sectional study of 438 nurses was conducted at four university hospitals in Croatia, based on the Perceived Implicit Rationing of Nursing Care Questionnaire.

Results: A lower assessment of the quality of care in the unit is associated with a higher score on the Perceived Implicit Rationing of Nursing Care Questionnaire, $r = -.379$, $p < .001$. A lower satisfaction with the current workplace is associated with a higher score on the Perceived Implicit Rationing of Nursing Care Questionnaire, $r = -.432$, $p < .001$.

Conclusion: The perception of nurses in Croatia indicates that the implications of nursing care rationing and dissatisfaction with their post in acute care hospital units are closely related to poor quality of nursing care provided to patients.

Implications for nursing management: Based on these results, nurse managers should take their nurses' perceptions of implicit nursing care rationing into consideration in order to develop strategies to improve nursing care delivery, nursing satisfaction and, consequently, better nursing care quality.

Keywords: acute hospital, implicit rationing, nurses' perception, nursing care

1.8. PRACTICAL MANAGEMENT PLAN FOR INVASIVE MOSQUITO SPECIES IN EUROPE: I. ASIAN TIGER MOSQUITO (*Aedes albopictus*)

Travel Medicine and Infectious Disease. 2020;doi:10.1016/j.tmaid.2020.101691
Epub 22 April 2020

Impact factor: 4.589

Bellini R¹, Michaelakis A², Petrić D³, Schaffner F⁴, Alten B⁵, Angelini P⁶, Aranda C^{7,8}, Becker N⁹, Carrieri M¹, Di Luca M¹⁰, Fălcută E¹¹, Flacio E¹², Klobučar A¹³, Lagneau C¹⁴, Merdić E¹⁵, Mikov O¹⁶, Pajović I¹⁷, Papachristos D², Sousa CA¹⁸, Stroo A¹⁹, Toma L¹⁰, Vasquez MI²⁰, Velo E²¹, Venturelli C²², Zgomba M³

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Abstract

Aedes albopictus, also known as the “Asian Tiger Mosquito”, is an invasive mosquito species to Europe causing high concern in public health due to its severe nuisance and its vectorial capacity for pathogens such as dengue, chikungunya, yellow fever and Zika. Consequently, the responsible authorities implement management activities to reduce its population density, possibly to below noxious and epidemiological thresholds. In urban areas, these aims are difficult to achieve because of the species’ ability to develop in a wide range of artificial breeding sites, mainly private properties. This document (Management Plan) has been structured to serve as a comprehensive practical and technical guide for stakeholders in organizing the vector control activities in the best possible way. The current plan includes coordinated actions such as standardized control measures and quality control activities, monitoring protocols, activities for stakeholders and local communities, and an emergency vector control plan to reduce the risk of an epidemic.

Keywords: Tiger Mosquito, *Aedes albopictus*

1.9. PROSPECTIVE RANDOMIZED APPRAISAL OF THE BEST PAIN RELIEF OPTION AFTER L4/L5 DISCECTOMY

Neurological Research. 2020;42(12):1003-1009

Impact factor: 2.401

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Abstract

Objectives: To determine the efficacy of paracetamol and tramadol analgesia via patient controlled pump and intermittent administration using the Short-Form McGill Pain Questionnaire after L4/L5 discectomy in neurosurgical patients.

Methods: Fourteen months prospective quantitative study with 200 neurosurgical patients' participation who underwent elective discectomy of the L4/L5 intervertebral disc extrusion. The study was conducted due to a patient-controlled analgesia pump and intermittent analgesia application. Pain was assessed using the Short-Form McGill Pain Questionnaire in the Croatian language during the zero, first, and second postoperative day.

Results: Perception of pain was reduced in patient controlled analgesia pump groups after the second measurement during the first postoperative day [95% CI: -3.89, -0.76], regardless of administered analgesic ($p < 0.001$). After the final measurement, at 7 PM on the second postoperative day, the differences were

not significant ($p= 0.070$). This study results are registered and allocated in the Australian New Zealand Clinical Trials Registry (ANZCTR).

Discussion: Analgesia administration via patient-controlled pump contributes to the alleviation of postoperative pain after L4/L5 disc extrusion surgery regardless of administered analgesic.

Keywords: pain management, discectomy, intermittent analgesia, patient controlled analgesia, postoperative pain

1.10. SETTING A BASELINE FOR GLOBAL URBAN VIROME SURVEILLANCE IN SEWAGE

Scientific Reports. 2020;10(1):13748. Epub 13 August 2020

Impact factor: 3.998

F. Nieuwenhuijse D¹, B. Oude Munnink B¹, V. T. Phan M¹, the Global Sewage Surveillance project consortium (Jergović M² et al), Munk P³, Venkatakrishnan S¹, M. Aarestrup F³, Cotten M¹, P. G. Koopmans M¹

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Abstract

The rapid development of megacities, and their growing connectedness across the world is becoming a distinct driver for emerging disease outbreaks. Early detection of unusual disease emergence and spread should therefore include such cities as part of risk-based surveillance. A catch-all metagenomic sequencing approach of urban sewage could potentially provide an unbiased insight into the dynamics of viral pathogens circulating in a community irrespective of access to care, a potential which already has been proven for the surveillance of poliovirus. Here, we present a detailed characterization of sewage viromes from a snapshot of 81 high density urban areas across the globe, including in-depth assessment of potential biases, as a proof of concept for catch-all viral pathogen surveillance. We show the ability to detect a wide range of viruses and geographical and seasonal differences for specific viral groups. Our findings offer a cross-sectional baseline for further research in viral surveillance from urban sewage samples and place previous studies in a global perspective.

Keywords: metagenomic sequencing, sewage, viral pathogens, virome, virus

1.11. SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 SEROPREVALENCE AMONG PERSONNEL IN THE HEALTHCARE FACILITIES OF CROATIA, 2020

Revista da Sociedade Brasileira de Medicina Tropical. 2020;53:
doi.org/10.1590/0037-8682-0458-2020

Impact factor: 0.2841

Vilibić Čavlek T^{1,2}, Stevanović V³, Tabain I¹, Betica Radić Lj⁴, Sabadi D^{5,6}, Perić Lj^{5,6}, Bogdanić M¹, Vilibić M⁷, Kolarić B^{8,9}, Kudumija B¹⁰, Petrović G¹, Mrzljak A^{2,11}, Karabuva S¹², Hrستیć I¹³, Capak K¹, Kucinar J¹⁴, Savić V¹⁵, Barbić Lj³

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Abstract*Excerpts:*

In Croatia, the first COVID-19 case was confirmed on February 25, 2020. A total of 3,272 cases and 113 deaths from COVID-19 were reported by July 7, 2020 (data of the Croatian Institute of Public Health). To date, there are no data on the prevalence of SARS-CoV-2 infection in healthcare settings. We analyzed the seroprevalence of COVID-19 in different professionally exposed populations.

From April 25 to May 24, 2020, when the COVID-19 epidemic curve was approaching the end of the first wave in Croatia, a total of 592 serum samples from HCWs and allied/auxiliary HCWs were tested for the presence of SARS-CoV-2 antibodies. Convenient samples were collected from six counties with a high incidence of COVID-19. WHO defined HCWs as all people at healthcare facilities involved in the provision of care for COVID-19 patients as well as those who may not have provided direct care to patients but may have come in contact with patients' body fluids, potentially contaminated materials or devices, and equipment linked to patients or environmental surfaces. The study group included: a) healthcare professionals working in different hospital/emergency wards; b) laboratory personnel included in the phlebotomy and SARS-CoV-2 diagnostic units; c) patient transporters; d) cleaning personnel; and e) others (social workers, physical therapists, and administrative workers). All participants included in the study filled out a questionnaire regarding their demographic information, clinical symptoms, and possible exposure to COVID-19.

The SARS-CoV-2 seroprevalence in healthcare facilities in Croatia is low, indicating that protective measures have been effective. However, further large-scale seroepidemiological studies are required to confirm this observation.

Keywords: SARS-CoV-2, Corona virus, COVID-19, Croatia

1.12. STABILITY AND TOXICITY OF DIFFERENTLY COATED SELENIUM NANOPARTICLES UNDER MODEL ENVIRONMENTAL EXPOSURE SETTINGS

Chemosphere. 2020;250:126265. Epub 20 February 2020

Impact factor: 5.778

Selmani A¹, Ulm L², Kasemets K³, Kurvet I³, Erceg I¹, Barbir R⁴, Pem B⁴, Santini P¹, Delač Marion I⁵, Vinković T⁶, Krivohlavek A², Dutour Sikirića M¹, Kahru A^{3,7}, Vrček Vinković I⁴

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Abstract

This study, motivated to fill the knowledge gap on environmental safety of selenium nanoparticles (SeNPs), provides information on the stability and environmental safety of four differently coated SeNPs rendering both positive and negative surface charges. The stability and dissolution behaviour of SeNPs were determined in an aquatic model media of different ionic strength to provide information regarding the environmental fate of SeNPs in different environmental conditions. The environmental safety of SeNPs was evaluated by acute regulatory toxicity tests using *Daphnia magna* and *Vibrio fischeri* as model organisms. Agglomeration was observed for all studied SeNPs in test media with

higher ionic strength caused by the disruption of surface charge leading to electrostatic instability. Toxicity of SeNPs on both aquatic species was dose-dependent and increased with exposure time. The obtained data indicated that all of the tested SeNPs could be classified as harmful to the natural bacteria *V. fischeri* and harmful to toxic to crustaceans *D. magna*, but dependent on the coating agent used for SeNPs stabilization. Although SeNPs have attracted great interest for use in biomedicine, this study demonstrated that their ecotoxicological effects should be considered during the design of new of SeNPs-based products.

Keywords: selenium, nanoparticles, stability, segregation, ecotoxicity, *Daphnia magna*, *Vibrio fischeri*

1.13. TICK-BORNE ENCEPHALITIS OUTBREAK FOLLOWING RAW GOAT MILK CONSUMPTION IN A NEW MICRO-LOCATION, CROATIA, JUNE 2019

Ticks and Tick-borne Diseases. 2020;11(6): doi:10.1016/j.ttbdis.2020.101513

Impact factor: 2.749

Ilić M^{1,2}, Barbić Lj³, Bogdanić M², Tabain I², Savić V⁴, Kosanović Ličina ML⁵, Kaić B², Jungić A⁴, Vucelja M⁶, Angelov V⁷, Kovačević M⁸, Rončević D⁸, Knežević S⁹, Stevanović V³, Slavuljica I^{9,10}, Lakoseljac D⁸, Vicković N¹¹, Bubonja Šonje M^{9,10}, Hansen L^{1,12}, Vilibić Čavlek T²

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Abstract

In June 2019, the Croatian Institute of Public Health was informed of a cluster of patients with laboratory confirmed tick-borne encephalitis (TBE) from the Gorski Kotar region. Five of the six patients with TBE reported consuming raw (unpasteurized) goat milk in the two week period before symptom onset, and one reported a recent tick bite. To assess risk factors for infection, we selected six control individuals from among healthy family and community members, and conducted a case-control analysis. None of the cases or controls were vaccinated against TBE. Individuals with TBE (cases) had 25 (95% CI 0.8-1410.2, $p = 0.021$) times higher odds of raw goat milk consumption compared to healthy controls. Milk samples from 12 goats from the implicated farm were tested for the TBE virus (TBEV) using RT-PCR. TBEV RNA was not detected in the milk, but serological testing of goats and other farm animals yielded evidence of exposure to the virus: Six goats from the flock had TBEV neutralizing antibodies. Our findings suggest that the vehicle for the outbreak was raw goat milk from a single farm. Following public health advice to cease consumption of raw dairy products, no further cases have been reported.

Keywords: Croatia, goat milk, One health, tick-borne encephalitis

1.14. UPDATED CHECKLIST OF THE MOSQUITOES (DIPTERA: *CULICIDAE*) OF CROATIA

Journal of Vector Ecology. 2020;45(1):135-139

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Abstract

Improvement of morphological and molecular identification methods allows the detection of new species of mosquitoes. The mosquito fauna of Croatia currently includes 52 species, belonging to eight genera, including *Anopheles* (12 species), *Aedes* (24 species), *Coquillettidia* (one species), *Culex* (seven species), *Culiseta* (six species), *Orthopodomyia* (one species), and *Uranotaenia* (one species). This is an updated checklist, which includes five new species found in Croatian mosquito fauna. Two of these are invasive mosquito species, *Aedes albopictus* (Skuse 1895) and *Aedes japonicus* (Theobald 1901), which are spreading across Europe and Croatia. The other three species, *Culex laticinctus* (Edwards 1913), *Culex torrentium* (Martini 1925), and *Anopheles daciae* (Linton, Nicolescu & Harbach 2004) are autochthonous species which have not been recorded so far. Since there are several more invasive species spreading across Europe, we assume that this is not the final list.

Keywords: checklist, mosquitoes, *Culicidae*, Croatia, Europe, invasive species

2. ORIGINAL SCIENTIFIC AND REVIEW ARTICLES IN OTHER INDEXED JOURNALS

2.1. ALLERGIC REACTION TO RABIES VACCINE IN A 4-YEAR-OLD GIRL DURING POST-EXPOSURE RABIES PROPHYLAXIS: A CASE REPORT

Clinical Case Report. 2020;10(10):1385. Epub 5 October 2020

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Abstract

Adverse events to vaccine or vaccine induced reactions and particularly hypersensitivity post-vaccination reactions to the rabies vaccine, are very rare. Therefore, we wanted to show a case of a four-year-old girl who developed an allergic reaction after a dog and cat bite during rabies postexposure prophylaxis. Sensitization to some component of the infectious agent of the rabies vaccine, grown on purified chick embryo cells but also on human diploid cells, has been proven. Although, allergic reactions to the rabies vaccine are extremely rare, vaccination can be done following the official WHO guide for pre-exposure and post/exposure prophylaxis in humans.

Keywords: adverse reactions, allergy, allergy testing to rabies vaccines, rabies post-exposure prophylaxis

2.2. AN INCREASING SCABIES INCIDENCE IN CROATIA: A CALL FOR COORDINATED ACTION AMONG DERMATOLOGISTS, PHYSICIANS AND EPIDEMIOLOGISTS

Zdravstveno varstvo. 2020;59(4):264–272

Impact factor: 1.097

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Abstract

Introduction: The aim of our study was to examine the scabies incidence in the Croatian population and to analyse potential related factors.

Methods: This mixed ecological study is based on a retrospective medical record review. National data from communicable disease reports was sourced and analysed for an 11-year period (2007-2017), with more focus on the period 2014-2017. Descriptive statistics were used to calculate trends. Differences between the groups were studied using Chi-square test and Kendall's tau (τ) correlation coefficient. Levels of significance were set at $p < 0.05$ or $p < 0.01$.

Results: From 2007 to 2017, scabies infestation in Croatia increased by 6-fold, particularly affecting children and young adults (19 years or younger). In the period 2014-2017, border counties which are part of migration flows were the

counties with the highest average scabies incidences. A linear trend of increase in the number of tourists, immigrants and scabies infestations was noted on the national level for the analysed period, although a significant association was not observed. Regarding outbreaks of scabies within institutions, more than 80% of outbreaks occurred in institutions for adults. In the capital, Zagreb, the crude incidence rate increased 3-fold between 2014 and 2017.

Conclusions: The increased incidence of scabies, large disparities between counties, and prolonged outbreaks within families due to under-recognition and misdiagnoses points to a need for increased awareness among health practitioners. To the best of our knowledge, this is the first recent epidemiologic analysis on this topic, not only in Croatia but within the wider geographic region as well.

Keywords: scabies, epidemiology, outbreaks, Croatia, neglected tropical diseases

2.3. HIGH PREVALENCE OF UNTREATED AND UNDERTREATED VITAMIN D DEFICIENCY AND INSUFFICIENCY IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE

Acta Clinica Croatica. 2020;59(1):109-118

Impact factor 0.497

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Abstract

Inflammatory bowel disease (IBD) patients with vitamin D deficiency show an increased risk of hospital admission, surgery, and loss of response to biologic therapy while high vitamin D levels are identified as a protective factor. Our goal was to investigate the prevalence of untreated and undertreated vitamin D deficiency and factors associated with vitamin D deficiency. In this cross-sectional study, we measured serum vitamin D in a random sample of Caucasian IBD patients. Vitamin D deficiency was defined as <50 nmol/L and insufficiency as 50-75 nmol/L. Supplementation was defined as taking 800-2000 IU vitamin D daily. Untreated patients were defined as not taking supplementation and undertreated group as receiving supplementation but showing vitamin D deficiency or insufficiency despite treatment. Our study included 185 IBD patients, i.e. 126 (68.1%) with Crohn's disease (CD) and 59 (31.9%) with ulcerative colitis (UC). Overall, 108 (58.4%) patients had vitamin D deficiency and 60 (32.4%) patients vitamin D insufficiency. There were 16 (14.8%) and 11 (18.3%) treated

patients in vitamin D deficiency and vitamin D insufficiency group, respectively. The rate of untreated patients was 81.7% (n=49) in vitamin D deficiency group and 85.2% (n=92) in vitamin D insufficiency group. Tumor necrosis factor alpha inhibitors were associated with higher serum vitamin D levels in CD and UC, and ileal involvement, ileal and ileocolonic resection with lower levels. In conclusion, not only is vitamin D deficiency common in IBD patients but the proportion of untreated and undertreated patients is considerably high. We suggest regular monitoring of vitamin D levels in IBD patients regardless of receiving vitamin D supplementation therapy.

Keywords: inflammatory bowel diseases, vitamin D deficiency, Crohn's disease, colitis, ulcerative

2.4. MISSED CARE FROM THE PATIENT'S PERSPECTIVE – A SCOPING REVIEW

Patient Preference and Adherence. 2020;14:383-400

Impact factor: 1.946

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Abstract

Missed care, defined as any aspect of patient care that is omitted or delayed, is receiving increasing attention. It is primarily caused by the imbalance between patients' nursing care needs and the resources available, making it an ethical issue that challenges nurses' professional and moral values. In this scoping review, conducted using the five-stage approach by Arksey and O'Malley, our aim is to analyze the patients' perspective to missed care, as the topic has been mainly examined from nurses' perspective. The search was conducted in April 2019 in PubMed, CINAHL, PsycINFO, Web of Science, ProQuest and Philosophers Index databases using the following terms: omitted care, unfinished nursing care, care undone, care unfinished, missed care, care left undone, task undone and implicit rationing with no time limitation. The English-language studies where missed care was examined in the nursing context and had patients as informants on patient-reported missed care or patients' perceptions on nurse-reported missed care were selected for the review. Thirteen studies were included and analyzed with thematic content analysis. Twelve studies were quantitative in nature. Patients were able to report missed care, and mostly reported missed basic care, followed by missed communication with staff and problems with

timeliness when they had to wait to get the help they needed. In statistical analysis, missed care was associated with patient-reported adverse events and patients' perceptions of staffing adequacy, and in patients' perception, it was mainly caused by lack of staff and insufficient experience. Furthermore, patients' health status, as opposed to gender, predicted missed care. The results concerning patients' age and education level were conflicting. Patients are able to identify missed care. However, further research is needed to examine patient-perceived missed care as well as to examine how patients identify missed care, and to get a clear definition of missed care.

Keywords: omitted care, care left undone, unmet nursing care needs, patient perceptions

2.5. MONITORING OF HARD TICKS AT URBAN RECREATIONAL SITES IN THE CITY OF ZAGREB FROM 2016 TO 2018

Croatian Journal of Infection. 2019;39(2):33-39. Published: 13 May 2020

Impact factor: 0.104

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Abstract

As tick-borne disease incidence and distribution is increasing worldwide, there is a true need for better understanding of the distributional ecology of their vectors. The aim of this study was to determine the diversity of hard ticks fauna (*Acari: Ixodidae*) and their seasonal dynamics in different habitats at three urban recreational sites in Croatia's capital, the City of Zagreb, known as the natural foci of Lyme borreliosis and tick borne encephalitis. Within a three-year period (2016-2018), the only species detected was *Ixodes ricinus* Linnaeus, 1758. Using flag dragging method 506 ticks were sampled; 273 (54%) in their nymphal stage, 166

(33%) as larvae and 64 (13%) as adults. The highest abundance of ticks was recorded at forest habitat. Seasonal activity showed their peaks at midspring and midsummer. Continuous monitoring of hard tick population in urban areas should and could become a standard method of tick-borne diseases prevention.

Keywords: hard ticks, Zagreb, Croatia, *Ixodes ricinus*, monitoring

2.6. DETERMINATION OF OCHRATOXIN A IN WHITE AND RED WINE

Medica Jadertina. 2020;50(4):277-283

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Abstract

Mycotoxins are by-products of molds and very common food contaminants. Cereals are most often contaminated, but research indicates that other types of foods can also be contaminated with mycotoxins. Wine is a food that is most often contaminated with ochratoxin A (OTA), which is formed as a product of molds occurring on grapes or later during its processing. Ochratoxin A, like most other mycotoxins, are food contaminants that adversely affect human and animal health, and their presence in food is regularly checked. In this paper, we analyzed white and red wines from the Koprivnica-Đurđevac vineyards sub-region for the presence of ochratoxin A, which is synthesized by molds from the group *Aspergillus ochraceus* and *Penicillium viridicatum*. As a member of the European Union, Croatia has adopted Regulation 1881/2006 on the establishment of the maximum levels for certain contaminants in foodstuffs, which unambiguously sets maximum levels for ochratoxin A in certain foodstuffs, including wine. A total of 34 wine samples, 19 white wines and 15 red wine samples were analyzed. OTA values ranged from 0.269 to 1.696 µg / L for white wine and from 0.254 to 0.565 µg / L for red wine. After isolation, the quantification of ochratoxin A from wine was performed by enzyme-linked immunosorbent assay (ELISA). All values of ochratoxin A obtained in the analyzed wine samples are lower than the maximum permitted amount of 2 µg / L, and are assessed as compliant and acceptable for

consumption. Considering the obtained results, it can be concluded that the presence of ochratoxin A in wines is evident, and it is necessary to continuously monitor its values in wines on the market, all for the purpose of consumer health protection.

Ključne riječi: mycotoxins, molds, ochratoxin A, white wine, red wine, ELISA

2.7. RAPID SPREAD AND POPULATION GENETICS OF *Aedes japonicus japonicus* (DIPTERA: CULICIDAE) IN SOUTHEASTERN EUROPE (CROATIA, BOSNIA AND HERZEGOVINA, SERBIA)

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Impact factor: 2.740

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Abstract

The Asian bush mosquito, *Aedes japonicus japonicus* (Theobald, 1901), a potential vector of several pathogens, has recently established in North America and Central Europe. In 2013, it was found on the Slovenian-Croatian border, and during the following years, it emerged in more and more counties of northwestern Croatia. Surveillance of *Ae.j.japonicus* and other invasive mosquito species was subsequently extended both spatially and temporally in Croatia and neighbouring Bosnia and Herzegovina and Serbia. Mosquito collections were conducted in 2017 and 2018, based on adult trapping through dry ice-baited CDC traps and BG-Lure-baited BG-Sentinel traps, larval sampling through dippers and nets, and ovitrapping. *Aedes j. japonicus* specimens from collected samples were subjected to population genetic analysis by comparing microsatellite signatures and *nad4* DNA sequences between sampled locations

and with data previously obtained from more western European distribution areas. *Aedes j. japonicus* immature stages were found at 19 sites in Croatia, two sites in Bosnia and Herzegovina and one site in Serbia. In Croatia, four new counties were found colonised, two in the east and two in the south of the previously known distribution area. A spread of 250 km could thus be documented within five years. The findings in Bosnia and Herzegovina and Serbia represent the first records of *Ae. j. japonicus* in these countries. Genetic analysis suggests at least two introduction events into the surveyed area. Among the locations analysed, Orahovica can be considered a genetic border. The individuals collected west of this point were found to be similar to samples previously collected in the border regions of Southeast Germany/Austria and Austria/Slovenia, while the specimens from more eastern Croatian localities, together with those from Bosnia and Herzegovina and Serbia, were genetically different and could not be assigned to a probable origin. Thus, introduction from Central Europe, possibly by vehicular traffic, into the study area is likely, but other origins, transportation routes and modes of entry appear to contribute. Further dispersal of *Ae. j. japonicus* to other parts of southeastern Europe is anticipated.

Keywords: mosquito, *Aedes japonicus japonicus*

2.8. SELF-ASSESSED QUALITY OF LIFE (QOL) OF RESIDENTS RECEIVING LEVEL 2 AND LEVEL 3 SOCIAL SERVICES IN COUNTY-OWNED NURSING HOMES IN THE CITY OF ZAGREB

Acta Medica Croatica. 2020;74(2):115-124

Impact factor: 0.19

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Abstract

The aim was to analyze whether there is significant difference in self-assessment of the examined domains of the quality of life in residents receiving level 2 and level 3 social services in county-owned nursing homes in the City of Zagreb. This analytical cross-sectional survey was conducted successively (2018-2019) in 3 county-owned nursing homes in Zagreb including residents from nursing homes with levels 2 and 3 social services. The Quality of Life Scales for Nursing Home Residents 2001 test was used to examine the self-assessed quality of life in 92 residents aged ≥ 65 , while Barthel Index modified by Shah, Vanclay and Cooper (MBI) was used to assess their functional independence. General sociodemographic variables were used including the level of social services provided. Study results showed that the self-assessed domains of functional competence ($Z = 5.050$), privacy ($Z = 4.687$), meaningful activity ($Z = 4.632$), interpersonal relationships ($Z = 3.394$), autonomy ($Z = 3.352$) and individuality

($Z = 3.755$) ($p < 0.001$ all) were significantly higher among residents receiving level 2 versus level 3 social services. Self-assessed quality of life ($N = 92$) showed the lowest level in the domain of food enjoyment ($Me = 11.40$; $IQR = 9.02-11.40$). In conclusion, difference in the examined domains of self-assessed quality of life between level 2 and level 3 users of social services in nursing homes guides the gerontologic multidisciplinary team in selecting interventions that can contribute to improving the quality of life of the elderly, especially the functionally dependent ones who need help of others in all areas of functioning (level 3 social services). The self-assessed quality of life of residents receiving level 2 and level 3 social services showed the lowest level in the domain of food enjoyment, which indicates the need for interventions in the implementation gerontologic nutritional standards and menus in nursing homes.

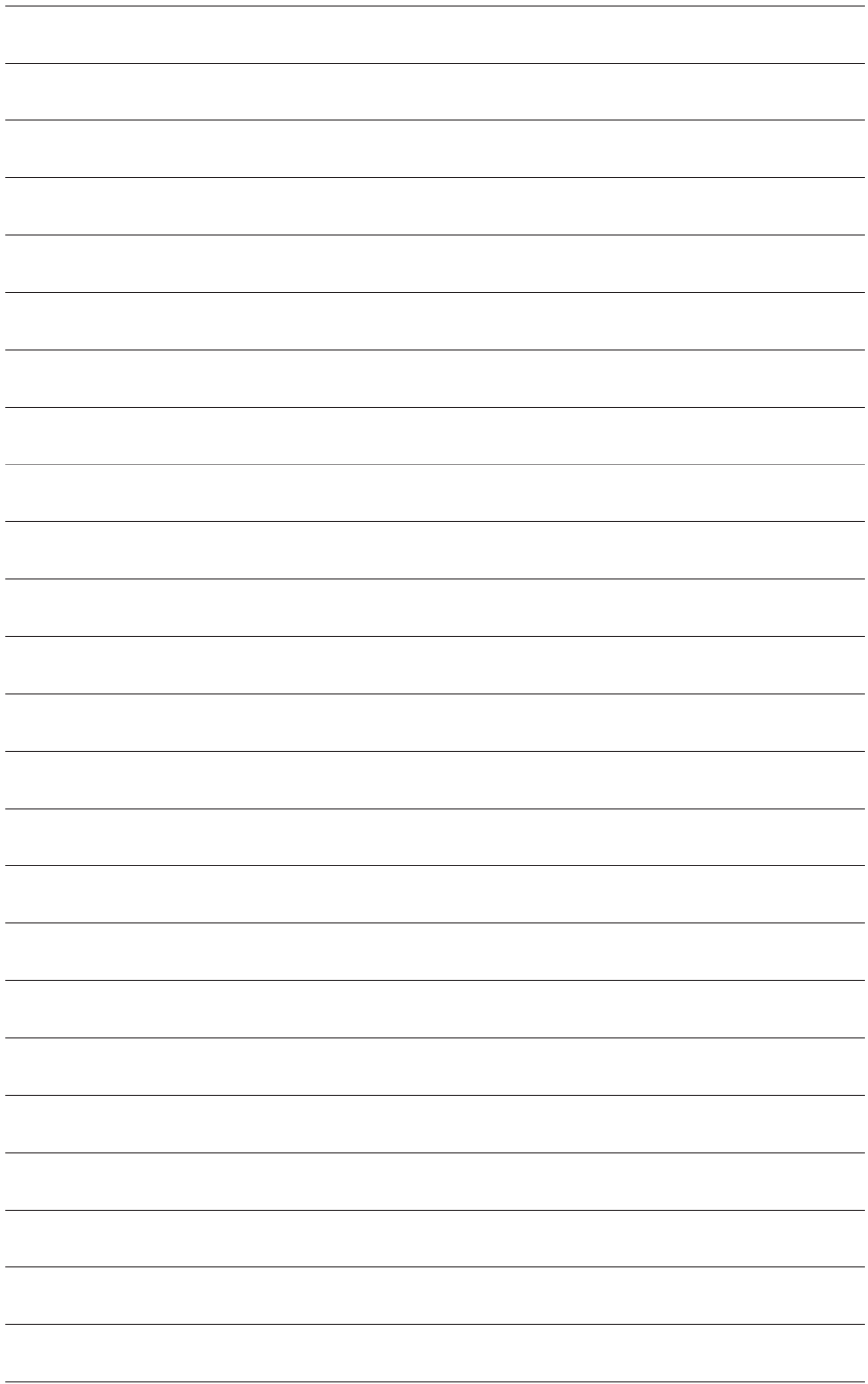
Keywords: functional independence, nursing homes, quality of life self-assessment, the elderly

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