Organized by International Centre for Rural Health of the University Hospital San Paolo of Milan, Department of Health Sciences of the University of Milan and Department of Surgical Specialties, Radiological Sciences and Public Health of the University of Brescia.

UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI
SCIENZE DELLA SALUTE

ICRH
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Welcome address

About half of the human population lives and works in rural areas, mainly engaged in agricultural activities. This ancient human activity produces food and uses land in a world where the demand for food is growing very quickly, and the quality and quantity of food are basic needs to ensure the health of millions of people. At the same time, agricultural activities are capable of causing environmental resource depletion and varying levels of pollution. Likewise, rural areas are directly linked with the wellbeing of entire communities, as demonstrated by the recent outbreaks of infectious diseases that were triggered in rural settings. Despite their major social, cultural, ecological and demographic relevance, rural areas are largely neglected by scientific research, health prevention and social protection. Rural inhabitants are suffering from an evident gap in life quality, sanitation, income, and distribution of social protection and economic benefits, including occupational health protection and services, as compared to urban dwellers. Importantly, rural communities are organized in villages, where agriculture and related activities are carried out very often by entire families, in which women, children and elderly represent an important proportion.

The village is the target of all preventive interventions in rural areas. Only a healthy village, inhabited by healthy dwellers, can produce healthy food for the entire community while respecting the living environment. At the end of the 16th International Congress on Rural Health, held in Lodi (Italy) on June 2006, the "Lodi Declaration on Healthy Villages" was approved, and the Campaign on Healthy Villages was launched. The Lodi Declaration highlighted that, due to the complexity and specificity of rural areas, the approach to rural health needs to be holistic, crosscutting, and integrative. Cross cutting needs include different levels of expertise (involving, for example, academia, rural health practitioners, rural community leaders and others), integration among disciplines (involving general medical practitioners, occupational and environmental medicine, agronomic sciences, veterinary medicine, rural sociology, and health systems), and collaboration among countries, particularly addressing the rural differences between the industrialized world, the growing developing countries and those countries still in transition. Consensus on these needs was partially achieved by the Cartagena Declaration issued during the 17th International Congress in Agricultural Medicine and Rural Health in October 2009, by means of which Latin America committed to strengthen Rural Health and Medicine in its region. The Lodi Declaration was adopted by the 18th International IARM Congress, and the Goa Declaration of December 12th, 2009 reaffirmed the relation between health, human rights, and economic growth underlining that health is more than a medical issue and that women's and children's

health is a human rights issue and closely interlinked with the empowerment of women and girls resulting in gender equality.

However, the following specific objectives remain to be achieved:
• Promoting universal coverage and access of disadvantaged populations to Primary Health Care and Occupational Health Care, to improve the health status of rural workers and dwellers and to reduce social inequalities;
• Improving the overall quality of rural enterprises, to produce adequate amounts of high quality food, taking into account nutritional, safety and hygienic issues;
• Reducing the environmental impact of agricultural activities all over in the world, through the diffusion of "green economy" principles;
• Reducing the burden of disease attributable to occupational and environmental risks at the workplace, environmental pollutants generated by agricultural activities, and an unhealthy diet.

The opportunity:
Milan is hosting the Universal Exhibition in 2015. The central topic is "Energy for Life, Feeding the Planet", by means of which the centrality of agriculture and rural areas in the world is strongly highlighted. This event constitutes a unique opportunity for organizing a four day event and calling professionals, experts and stakeholders from different areas of health and rural sciences unite jointly to address the varied aspects of agriculture and rural health, aimed at priority setting, making rural health problems visible, and finding feasible and sustainable solutions for rural populations.

The proposal

This event is targeting all international experts in rural health in the world. It will be organized in such a way to ensure the participation of the main national and international associations and organizations involved in Rural Health along the lines already defined by WHO including its efforts towards the "Health for All" programme, by reinforcing Primary Health Care services as the way to achieve universal health service coverage, and, as highlighted in the den Haag Conference, towards the need of an integration of Occupational Health services within Primary Health Care.
The main international associations active in the field will be also present: the International Association of Rural Medicine and Health (IARM), which has decided to organize during this Congress its own 18th World Congress, the Wonca party on Rural Practice, which will organize specific sessions and lectures, the International Commission on Occupational Health (ICOH), which will be present with five Scientific Committees, those on Rural Health, Occupational Toxicology, Toxicology of Metals,

Occupational Health and Development, and Indoor Air quality and health together with the European Rural and Isolated Practitioners Association (EURIPA).

This means that in this event all the main actors active in the world in the field of rural health will be present: this is a promise for a future of prevention and health in Rural Areas.

Prof. Claudio Colosio
Congress President

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Keynote Lectures- September 9th 2015

Ethics in occupational and rural health

Sergio Iavicoli

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Over the last two decades there has been increasing attention to questions of professional ethics in the field of occupational health in both developed and developing countries partly due to the changing world of work, demographic changes, introduction of new technologies. These changes led to the questioning of traditional ethical principles (principle of autonomy, beneficence, non maleficence and justice) and the emerging of ethical issues related to occupational health. Particularly outstanding is the role of the occupational health professionals (OHPs) whose choices embrace a larger number of ethical responsibilities if compared to healthcare workers as they are required not only to protect workers' health but also to meet the needs of all subjects involved in the decision-making process (employers, OHS professionals themselves, insurance system). This is particularly true, as an example, in the agricultural sector where the extreme fragmentation of small and family-run agricultural holdings, combined with the large presence of migrant workers, give rise to critical issues affecting occupational ethics. The need to balance risks and benefits of individuals and the interests of the wider community is not unique to occupational health. At this end, the International Code of Ethics for Occupational Health Professionals of the International Commission on Occupational Health (ICOH) represents a tool aimed at translating, in terms of professional conduct, the values and ethical principles in occupational health taking into account the highest professional standards and ethical principles. The principles included in the ICOH Code of Ethics have been worldwide successfully implemented in some national legislation (e.g. Argentina and Italy).

Agricultural Health and Medicine Education—engaging rural practitioners to make a difference to farmers' lives.

Susan Brumby RN, RM, DipFarm M'Ment, MHM, PhD

National Centre for Farmer Health, School of Medicine, Deakin University, Hamilton, Australia

OBJECTIVES:

The Discipline of Rural Health—the interdisciplinary study of health and health care delivery in rural environments— is a well-recognised discipline globally. Within these rural populations, farmers and agricultural workers live and work. Despite increasing evidence indicating serious and ongoing inequities in health, wellbeing and safety, farming populations have lagged behind the health progress of metropolitan populations and other industries. Despite continued higher rates of workplace injuries, earlier morbidity, traumatic death and suicides in farming populations globally, there are few formal programs focused on Agricultural Health and Medicine (AH&M). Recognising this gap, a specialty postgraduate unit that focuses on the anticipation, diagnosis, treatment and prevention of illnesses and occupational injuries in agricultural populations was developed in 2010 in Australia through Deakin University [1]. The original curriculum was adapted from the University of Iowa (UoI) course[2] and was designed to enable health care providers to deal more efficaciously with particular illnesses and conditions, which farmers and agricultural workers, as distinct from other rural people, present. Additionally the curriculum aims to support agricultural professionals to play a role in preventing occupational illness and injury through increased health literacy.

METHODS:

It is five years since the course was introduced into Australia. Quantitative data were collected from students who had completed the AH&M unit to determine

- changes in students attitudes
- self-reported behavioral changes as a result of completing the course
- if students found the course to be professionally valuable
- the level of knowledge retention since taking the course in terms of major course concepts/objectives

Data was also collected from students in the USA who had completed the UoI program in the same period[3]. Data was analysed using descriptive statistics, frequencies and the chi-square test to consider similarities and differences

RESULTS:

Over 90% of the Australian students agreed the course improved their ability to diagnose, prevent and treat farming populations. Over 80% of past students were working in rural communities[4]. The AH&M course addressed in a disciplined method the health of a population with documented need and is in line with growing societal expectations that health professionals are knowledgeable about specific population-based issues.

CONCLUSIONS:

To address ongoing health disparities globally action is required to ensure health care providers are culturally competent to work in agricultural communities, health literacy is increased in the agricultural professions and global translation and implementation of AH&M a high priority.

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Indoor air pollution in rural areas: a priority for public health

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Introduction

Indoor air pollution in rural locations has been recognized by the World Health Organisation as an important and widespread problem (WHO, 2000).
In rural locations, combustion of biomass fuels is the major source of indoor pollution (WHO, 2006). Biomass fuel is any material derived from plants or animals, which is deliberately burnt by humans. Most of this cooking is done indoors with unvented stoves; combustion is very incomplete in most of these stoves, resulting in substantial emissions, which, in addition to poor ventilation, produce very high levels of indoor pollutants. The most important pollutants are particles, carbon monoxide, nitrous oxides, sulphur oxides, formaldehyde, and polycyclic organic matter, including carcinogens such as benzo[a]pyrene. Measured levels of air pollution in these houses greatly exceed indoor and outdoor air concentration; for example, indoor concentrations of particles are typically in the range 300–3000 mg/m3 and may reach 30000 mg/m3 or more during cooking periods.

Other sources of indoor air pollution in rural countries include environmental tobacco smoke, pesticides, smoke from nearby houses, burning of forests, agricultural land and household waste and use of kerosene lamps.

Health effects

Several studies have reported an association between exposure to biomass smoke and acute and chronic pulmonary diseases. By far the largest contribution to the disability adjusted life years lost arises from acute respiratory infections because of their high incidence and the mortality among young children. Asthma, interstitial lung disease, tuberculosis, lung cancer, low birth weight, perinatal mortality and effects on cardiovascular disease has been suggested.

Conclusions

Studies on indoor air pollution in rural areas, together with policy and macroeconomic studies, are required to develop preventive interventions. The goal of interventions should be to reduce exposure to indoor air pollution, jointly domestic energy and cultural needs and improving safety, fuel efficiency and environmental protection.

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Models and approaches for improving the access of rural workers to occupational health care

Agricultural Health program in Iran's Primary Health Care (PHC) system

Reza Ezzatian

Ministry of health and medical education, Environmental and occupational health center, Tehran, Iran.

OBJECTIVES: kAP measurement and Improvement of Iranian Agricultural health program indicators

METHODS: This is a cross sectional. The standard questioner was developed for data collection and samples were selected randomly from all Medical Sciences Universities.

A total number of 10000 farmers health surveillance files were investigated and analyzed by SPSS version 18.0 Software

RESULTS: 37.5%, 50% and 53.5% of farmers had good performance in protection of hearing, eyes and skins respectively and 46% in use of personal protective devises, 88.9%and 36.6% of farmers had adequate knowledge about harmful effects of pesticides and work posture respectively and 64.5% in healthy behavior during work. There were 36% and 26% of farmers with heat and cold stress exposure knowledge respectively, 42% and 43% of farmers knew about work palace harmful agents and safety guidelines in agricultural respectively. And Agricultural Health Committee to be held percentage (in province and restrict) 35 and 60 respectively. Findings showed that a combination between occupational health services and Technical training to farmers, educating them and establishment of standards for Agricultural jobs and instruments are key concepts for farmers, products and environment health IMS system. Supervision of pesticides marketing is related with farmer's knowledge.

CONCLUSIONS: Our findings will suggest the combination of farmers training and health monitoring supervised by Agricultural Health Committee as a successful model for agricultural health program. Following these findings, Occupational Health in Farm Farmers School (IPM-FFS-OHM) will be our suggested approach.

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Efficiency and quality of rural health services in region of Kazakhstan

Kenesh Dzhusupov [(1)] - Karlygash Toguzbaeva [(2)] - Aigul Karakushikova [(2)] - Sirim Shayakhmetov [(2)]

International school of medicine, International school of medicine, Bishkek, Kyrgyzstan (1) – Kazakh national medical university named after S.D. Asfendiyarov, Kazakh national medical university named after S.D. Asfendiyarov, Almaty, Kazakhstan (2)

OBJECTIVES: The objective of this work was to evaluate efficiency and quality of activity of rural outpatient clinics in Karasai district of Kazakhstan.

METHODS: To evaluate quality of health services, 500 rural respondents were questioned; focus groups of mothers, elderly women and young people were carried out. Evaluation of efficiency of work of rural outpatient clinics 19 performance indicators were calculated based on reporting documents, including, for example, the rate of prevented maternal death at PHC level, the share of successfully treated women with extragenital pathology among childbearing age women, etc.

RESULTS: Analysis of factors associated with access to health care showed that the probability of visiting a doctor is affected above all by a person's gender, education, health and self-esteem, in the last instance, by financial situation.

A summary of indicators of the quality of medical services provided by the ROC for 2012 showed their high efficiency and good quality of their activities: coverage of pre-natal screening and contraception women with absolute contraindications to carrying a pregnancy above 94%; full enrollment of patients with diabetes and free medicine provision. Reduced child mortality. Coverage of planned population by fluorographic examination was below 70%.

39% of the respondents received medical services in 2012. The quality of medical services received in the previous 12 months prior to the study evaluated by respondents as satisfactory. Less than half of respondents (46%) rated the quality of care received more as good, 16% - very good, 7% of respondents rated the quality of service excellent; 13%- rather bad, 8% - poor quality of medical services, and 4% - as very bad.

CONCLUSIONS: Assessment of 19 indicators of performance of rural outpatient clinic in Karasai district of Kazakhstan showed its good efficiency. The surveyed rural population of villages evaluated received health services as satisfactory.

Occupational medicine and rural health in R. Macedonia - current perspective and future directions

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Background. Working population in R. Macedonia encompasses over 950.000 people and there are over 110.000 agricultural workers. Considering the fact that about 40% of the population in Macedonia is rural, Ministry of Health ensured good health coverage of rural population with primary health care services. Despite that, agricultural workers are not adequately covered by specific health care regulated by the occupational safety and health legislation. Key informant survey identified agriculture as high risk sector in the country leading to Program for health and work ability assessment in agricultural workers in R. Macedonia, initiated by the Institute of Occupational Health of RM and supported by the Ministry of Health.

Methods. Retrospective analysis of the data obtained by the Program conducted from 2009 to 2013 in different parts of the country. Over 6.500 agricultural workers completed specially designed questionnaires (demographics, health behaviors, occupational history, preventive measures, health status, and work-related health problems). Health promotion activities (including distribution of thematic brochure) were implemented in all study subjects. Preventive medical examinations (occupational medicine specialist and psychologist check-up, lung function tests, ECG, standard analyses of blood and urine) were conducted in about 2.000 randomly selected subjects having agriculture as a primary occupation.

Results. Study identified the most frequent agricultural activities (cultivating vegetables, planting, digging in the fields), occupational hazards (inadequate climatic factors, dust, chemical agents), work organization aspects (12 hours workplace activities during season) as well as the most important work-related symptoms (back pain, pain in the extremities, and fatigue). None of the participants was previously examined by occupational medicine specialist. Clinical check-up highlighted cardiovascular, musculoskeletal, and respiratory diseases.

Conclusion. The results of the Program were disseminated nationally and internationally. It set scientific methodology contributing to the identification of both specific occupational hazards and work related health problems. Specific measures aimed to improvement of health and work ability in agricultural workers and rural population were defined.

The use of occupational health care services and farmers' opinions concerning them in Finland

Birgitta Kinnunen

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OBJECTIVES: There are approximately 68 000 insured farmers in Finland. For farmers and self-employed persons it is voluntary to arrange occupational health services for themselves. Farmers' occupational health services (FOHS) are mostly arranged in municipal health care centres. In the FOHS protocol, an occupational health nurse and the local agricultural advisor, occasionally accompanied by an occupational health physician and/or a physiotherapist, visit the farm to survey work conditions (farm walk-through). The health check is done with the occupational health nurse and it is extended by occupational health physician if there is any suspicion of work-related diseases, mental disorders or chronic illness affecting work ability, for example. A decree, effective from 2014 on, demands more co-operation between farmers and health care professionals in the FOHS. The main objective of this quantitative study was to investigate farmers' satisfaction and contacts with FOHS in 2014 compared to 2004.

METHODS: The data was collected in 2014 via a computer-aided telephone interview system resulting in responses from 3117 farmers. Most of the data was collected from full time farmers (n=2122). The results are compared to a similar study conducted in 2004 (n=1182).

RESULTS: Of farmers interviewed, 64% had purchased FOHS for themselves in 2014, whereas the figure in 2004 was 54%. In 2014, 87% and in 2004, 81% of farmers were satisfied with the services. A Farm walk-through had been done during the last four years for 78% of the farmers, and 91 % of them were also satisfied with it. A health check had been conducted for 82% of the farmers in 2014, when in 2004 the figure was 69%.

CONCLUSIONS: In Finland, FOHS have improved. There are more activities and farmers reported higher satisfaction with the services they receive. The challenge is to make FOHS a more interactive process.

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Migrant agricultural workers and Canada's "not so universal" health care system: lessons learned from an effort to improve access to health care in the province of Ontario

Stephanie Mayell [(1)] - Janet McLaughlin [(2)] - Michelle Tew [(3)]

McMaster, University, Hamilton, Canada (1) - Wilfrid Laurier, University, Brantford, Canada (2) - Occupational Health Clinics for Ontario Workers (OHCOW), Clinic, Hamilton, Canada (3)

BACKGROUND:

There are approximately 40,000 migrant agricultural workers (MAWs) employed on temporary labour contracts in Canada, primarily from Mexico and the Caribbean. Although they have legal access to provincial health care under Canada's "universal system," these workers experience numerous practical barriers, including: long work hours; limited clinic hours; lack of transportation; delays in receiving health cards; lack of information about and integration into the local health care system; dependence on employers, and resulting confidentiality concerns; and language and literacy barriers. For the first time in 2014 a pilot program was initiated that was designed to mitigate barriers through provision of walk-in style primary care clinics and community outreach in two regions of Ontario with the highest concentration of MAWs. This presentation assesses this program, outlining challenges and successes, and offers strategies for other service provider organizations and community partners interested in improving care for MAW populations.

METHODS:

Data were gathered in two regions via clinic records, a convenience sample of client surveys (N=86), 3 focus groups with selected key system stakeholders, clinicians, community partners, and other clinic participants (N=24), physician surveys (N=7), and qualitative interviews (N=2).

RESULTS:

There were 462 workers seen at the clinics (visits = 715). Client survey respondents (N=86) stated their health needs were met and the location of the clinic was easy to find. The predominant health issues presented, impact of outreach on community capacity, lessons learned, and continuing challenges will be discussed.

CONCLUSIONS:

Although these programs exceeded projected targets, only 5% of the MAW population in the two regions was served. Providing follow-up and secondary care remained challenging. This clinical model is a demonstration of an enhanced/specialized public system model bolstered by support from community partners. Future programming will continue to build on this model.

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Slavery and other forms of human exploitation

The exploitation of migrant workers in the Italian agricultural sector: a case study from a Ghanaian community of day-labourers in northern Apulia

Gloria Carlini

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The notion of slavery traditionally entails extreme exploitation, property rights and individual ownership. These concepts have been reflected in various legal instruments as well as in the popular understanding of slavery for centuries. Although the existence of legal definitions, the question of identifying what sort of practices can be classified as forms of slavery has never been an easy task, ranging between literally and rhetoric interpretations.

Even in the contemporary debate, the attempts to define and analyze slavery still rise a lot of questions: what counts as a slave in the contemporary world? When forms of contemporary extreme exploitation fall under the category of slavery? These questions open up a debate that seems to fit particularly well in the analysis of the working and living conditions of west-African migrant day-labourers in the southern Italian agricultural sector. In the last decade, the recruitment system headed by caporali (i.e. go-between the landowner and the daily workers that exercise physical and psychological violence on the latter), and the exploitative working conditions of these migrants have sparked the debate whether they can be defined as "new slaves".

Through an ethnographic analysis of life histories and work biographies collected during my field research in Apulia, a region renowned as the biggest Italian tomato district, within a group of Ghanaian seasonal workers, I'll try to reconstruct the paths of the "things" - the tomatoes - and that of these workers, and to answer the question: are they slaves?, showing how necessary is to place the living and working experiences of these migrants at the core of the contemporary anthropological debate on human bondage and slavery.

Research has been supported by the European Research Council under the European Union's Seventh Framework Programme (FP7/2007-2013)/ERC Grant agreement n° 313737: Shadows of Slavery in West Africa and Beyond: A Historical Anthropology, and has received authorization by Bicocca Ethic Committee

Enduring marginalities: Social hierarchiesandAgricultural labor in Southern Morocco

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The Black population of Morocco (Haratin) have historically occupied marginalized position in the social, economic and political life of the country. Even though they were considered legally free, the Haratin were ranked between free populations (aḥrar) and the slaves and their descendants ('abid) in the social hierarchy, dominated by the descendants of the Prophet (shorfa). They worked as specialized craftsmen and shared croppers for their Arab and Berber patrons, keeping on 1/5 of the harvest. Dominant Arab and Berbers groups define them as "people without origin (aṣl)"—the cultural concept of aṣl indicates both geographical and genealogical origin.

This paper explores the changing system of social relations and agricultural labour in Southern Morocco in the light of the emergence of salaried work, school education and transnational mobility in postcolonial Morocco. Thanks to the opportunities of social mobility and emancipation opened during the French Protectorate (1912-1956) the Haratin could find alternatives to exploitative agricultural work in the rapidly booming coastal cities and in migration to French colonies in Algeria, and then to Europe. Salaried work and migration enabled them to escape labour exploitation and at times to accumulate the financial means to buy land and build a sense of belonging, from which they had been excluded. In postcolonial Morocco, policies of national development, mass education and the abolition of privileges based on origin catalyzed these processes. Tracing these historical developments, this paper explores the continuity and discontinuity in the form of marginalization and exclusion that the Black population experience today.

The Jijiyaabe and the Rimbe of Southern Senegal. The rural predicament of the legacies of slavery

Alice Bellagamba

University of Milan-Bicocca, University, Milan, Italy

OBJECTIVES: To discuss how a past of violence and exploitation shapes the social world and livelihood of Southern Senegalese peasants.

METHODS: Oral history and ethnography

RESULTS: Scholars, state officials, development experts, and the population itself describe the eastern Casamance as an enclave. Dakar, the capital city of Senegal is far. The roads are poor, the transports bad and expensive. Besides smuggling, the two most flourishing economic activities of this part of Senegal - the irrigated rice project of the Ananbé basin and the weekly market of Diaobé – are under the control of external investors and entrepreneurs. It is against this background that I study the legacies of slavery. Until the beginning of the 20th century, the eastern Casamance served as a 'slaving zone', i.e. an area ravaged by raids that fed the internal and external slave trade. The traces of this not-so remote past loom large in the memories and daily lives of the population. Jiyaado (plur. jiyaabe) is the local term that translates the idea of 'slave descendant'. Dimo (plur. rimbe) identifies the offspring of nobles and slave-owners. There is tension between the two social categories as much as collaboration that help counter the hazards of rural life (droughts, lack of health and educational facilities, the increasing prizes of seeds and fertilizers, cattle epidemics).

CONCLUSIONS: This case study contributes to debates on the legacies of slavery by identifying two levels of analysis: the macro level of national and international political economy and the micro one of people's life trajectories.

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The social life of the global greenhouses. Stigma, servile work and labourers' vulnerability in Jordanian agribusiness

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Greenhouse production are today the globalized icon of agribusiness and intensive agriculture for the market and are presented widely as symbols of modernized and successful rural landscape. In the Jordan Valley, as in other regions, they represent icons of modernity and productivity. Indeed, intensity is what characterized these work places: intensity of climate conditions, intensity of profits of agricultural managers, intensity of unprotected workload, of exposure to the intensive use of chemicals and fertilizers (often banned in other countries). In short they well represent, the modern servile work of wage labourers, who often are displaced, migrants or are composed of a strong feminization of labourers.

In Jordanian Jordan Valley, working 'juwwa al biut al-plastic' ("the house of plastic"), inside the greenhouses, generally involves exhausting and dependent work relationship, and from local perceptions, it is itself a stigma of low status: the shame of working in servile conditions, of promiscuous labourers, of devalorized farm work of Egyptian migrants, Pakistani displaced, Palestinian refugees or local women of low-status are the hands "at disposal" behind winter tomatoes exported to the Gulf or north-European markets.

In this frame the local feeling of being vulnerable and ill is often linked to this new environments and work conditions, where the social and cultural reality vulnerability cannot be detached from the medical one: illness due to chemical exposure as much as the dishonour of servile work, the dependence to highly flexible work-hours for women, as much as the blackmail of visa for work, or hiding for work (in case of illegal migrant labours) for migrants, the stigma of rural work value, living in hats in farms built with recycled pesticides plastics and boxes, all aspects that compose the social life of agribusiness modernity.

Public Health Strategies and governance in rural areas

The use of QFD for safety assessmkent of machinery

Mario Fargnoli (Italian Ministry of Agriculture), Massimo Tronci (Sapienza University of Rome)

In last decades Quality Function Deployment (QFD) method has been used widely in most of industry sectors, focusing the attention on the so-called Voice of Customers for the development of higher quality products and services. Only recently its use has been extended to the improvement of different properties of products and services, such as: environmental sustainability, reliability, maintainability, etc.

Instead, it has to be underlined that a few research works on the use of QFD in the field of products' safety have been presented so far.

This is due to the fact that main issues and targets concerning products' safety are defined by laws and regulations (e.g. directive 2006/42/EC): whenever a higher level of safety can be achieved it becomes the standard level.

Nevertheless, QFD can be support designers in optimizing safety characteristics together with other characteristics of the product, allowing us to guarantee an adequate safety level of the product without reducing other performances.

In this study, a specific Safety-QFD framework has been implemented through its application to gardening machinery. More in details, the House of Quality was used to evaluate the relationships between causes and effects of possible risks of the product user.

Results achieved show that such a procedure can be used for the risk assessment of products effectively, allowing the designers to obtain the priority of interventions aimed at increasing the safety level of the product. In particular it represents an ease-of-use tool in case of re-design or update of machines due to safety requisites evolution.

International and regional approaches to safety and health requirements for designing agricultural and forestry machinery

Antoon Vermeulen

CNH Industrial Belgium N.V.

The presentation gives a short overview of the rules that apply on agricultural machinery related to the health & safety aspects in the main regulated regions of the world. It is not a surprise to discover that the various regulations are dispersed and fragmented, both in the pro-active stage (during design and manufacturing stage) and the re-active stage (during the use of and accidents with machinery).

The product safety standards are not globally, the conformity assessment procedures are different and must often be repeated per region. Market Surveillance is sometimes not well established or left to individual or collective lawsuits. The EU28 H&S Directives (MD, EMC, ……..) had a leading role and were often copied, however without mutual recognition. All this has resulted in a very complicated scheme of approval marks, 3rd party certifications and declarations.

Of course the industry prefers unique and global standards and conformity assessment procedures, together with mutual recognition.

Further in the presentation, some peculiarities of the EU Machinery Directive are highlighted from the viewpoint of the manufacturers (and end-users), in particular about risk assessment methods and the various kinds of reasonably foreseeable misuse.

To illustrate the latter theme, there is the writer's viewpoint about an example of deficient translation of the Essential Health & Safety Requirements of the Machinery Directive into a CEN product safety standard.

Market surveillance activity as a way to ensure health and safety of machinery, eliminate unfair competition and help manufacturers in designing

L. Vita

Market surveillance can be carried out at any stage after the construction of the machinery is complete, as soon as the product concerned has been made available for distribution or use in the EU. For these reasons it is important that this activity is developed also at earliest stage, when the machinery is not already in use by the operators. The machinery surveillance joint project Italy – France at the begin of 2000, involving different kinds of machineries also in the agricultural sector, revealed that developing market surveillance activity during fairs increases the number and typologies of machineries which can be analyzed at the same time. Starting from that experience INAIL developed a specific activity within the national project regarding the promotion of health and safety in the agricultural, forestry and zootechnical sectors (progetto CCM "Promozione della salute e Sicurezza nelle attività agricole, zootecniche e forestali") approved by Ministry of Work. In particular, in Italy during the main agricultural machineries international fairs a market surveillance campaign has been organized.

Some specific typologies of agricultural machineries have been preliminary chosen on the basis of accident data or significant possible non conformity due to recent changes in the reference harmonized standard. This leaded to about 150 machineries investigated in more or less three years, remarking that market surveillance is an essential instrument in as much as it ensures the proper and uniform application of Directive, not only ensuring health and safety of machinery but also providing help to manufacturers in designing compliant machineries and eliminating unfair competition.

A new way to register and prevent accidents involving agricultural and forestry machinery

E. Ariano, V. Laurendi

In the agricultural sector, much more than in other working sectors, there are several operators (employees or not) for which an eventual accident is not registered by the traditional detection systems used for collect and elaborate data referring to accidents at work. In particular, in the agricultural and forestry sector this kind of operators are mainly self-employed workers for whom the agricultural activity is not predominant and hobbyists. These subjects are not covered by institutional working insurance. Thus, accident which may involve these typology of workers is not accounted among the official statistics of the National Institute for Insurance against Accidents at Work (INAIL). For this reason the INAIL research unit involved in the agricultural sector in between 2007 - 2009 developed a specific observatory in order to collect all the information about accidents involving agricultural machineries which occurred also to self-employed people and hobbyists. This activity interests also the local inspectors for safety at work and it has been developed within the national project regarding the promotion of health and safety in the agricultural, forestry and zootechnical sectors (progetto CCM "Promozione della salute e Sicurezza nelle attività agricole, zootecniche e forestali") approved by Ministry of Work. Nowadays it is possible to collect all the information in short time and in the same manner all over the national territory and consequently use and analyze these data for different purposes (e.g. elaborate statistics, use the information acquired for verifying the relationship between the accident and the possible lack of machinery safety requirements, etc.).

Diagnosis and prevention of musculoskeletal disorders in agriculture

Comparison of the Strain Index and OCRA Checklist for Risk Analysis of MSDs

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Introduction

The purpose of this study was to characterize the inter-method reliability of two physical exposure assessment methods, the Strain Index (SI) and Occupational Repetitive Actions (OCRA) Checklist, often used in occupational health studies to assess the risk of musculoskeletal disorders.

Methods

Eight raters used the SI and OCRA Checklist to assess task-level physical exposures to the upper extremity of workers performing 21 cheese processing tasks. Inter-method reliability was characterized using proportion of overall agreement, Bowker's test of symmetry, Cohen's weighted kappa, and Spearman correlations.

Results

Strain Index and OCRA Checklist assessments classified job tasks into similar risk categories. Inter-method reliability was moderate overall but poor for more complex tasks.

Conclusion: The SI and OCRA Checklist are similar physical exposure assessment methods and either may be appropriate when assessing repetitive job physical exposures to the upper limbs.

Differences in musculoskeletal occupational disease incidence and notifications between the Po Valley and the Appennines

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INTRODUCTION

In 2010 occupational diseases (ODs) notifications in agriculture in Italy were 6380. Particularly musculoskeletal disorders notifications were 76% of all notifications. The aim of this study is to evaluate differences in musculoskeletal ODs notifications between farmers working in mountain and in plain, because of they have different musculoskeletal occupational hazards.

METHODS

We analyzed reports of musculoskeletal ODs notified to obtain a compensation between 1997 and 2013. We chose to study the province of Bologna because of its clear differentiation between plain (the Po valley) and mountain (the Appennines) areas. We estimated crude rates per 1000 per year using as a denominator the workforce in agricultural sector (census 2011). We tested the equality of proportions between plain and mountain rates, accepting an alfa-error of 0.05.

RESULTS

We found significant differences between plain versus mountain rates for

-lumbar herniated disc: 0.8(95%CI 0.62-1.01) versus 0.36(95%CI 0.23-0.55);
-knee arthritis and others knee diseases: 0.40(95%CI 0.28-0.56) versus 0.16(95%CI 0.08-0.30);
-shoulder diseases: 1.29(95%CI 1.07-1.56) versus 0.81(95%CI 0.60-1.07).

DISCUSSION AND CONCLUSIONS

Results lead to think musculoskeletal ODs incidence among farmers is higher in the Po valley than on the Appennines. This is unexpected, considering what we can presume on the basis of occupational hazards.
If we could consider as expected such a tendency in agriculture for lumbar herniated disc, because of farmers working in extensive crops spend a lot of time using tractors and are more exposed to whole-body vibration, we cannot do this for knee arthritis: on mountain, farmers work in rough terrains, rising ground and are so more exposed to knee biomechanical overload.
To explain those figures, it could be hypothesised that reporting of ODs is not just depending on occupational hazards or work-related diseases real incidence, but probably also on other issues like underreporting, overdiagnosis and cultural or socioeconomic factors.

Dairy Consortium International Perspectives on Health and Safety among Dairy Workers: Challenges, Solutions & the Future

Comparison of upper limb muscle activity between US and Italian industrialized Dairy operations

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Background:

Biomechanical risks bring about a significant burden of musculoskeletal disorders across all industries (OSHA, 2014), and dairy milkers of the modern milking industry are exposed to these risk factors. Several variables may affect the physical load of the workers and the related musculoskeletal risk. Among these, prominent are herd size and level of task specialization (Douphrate, Gimeno, et al., 2013). Dairy systems are similar in North America and Italy, as using loose-housing dairy parlors is common, but the size and the levels of specialization are different. Therefore, a comparison between European and USA milking systems might be very useful to collect a better understanding of the main musculoskeletal risk determinants. Aim of this study has been the comparison between loose-housing parlor systems in USA and in Italy, focusing on muscle activity and physical load, through systematic collection of surface electromyography data and selected information regarding working modalities. This study is part of a bigger study whose aim is investigate risk factors of musculoskeletal disorders in dairy workers and adverse clinical outcomes.

Methods:

The study has been conducted with the same protocol in USA and in Italy. In particular: 29 healthy dairy workers were recruited from three large-herd dairy farms in Colorado and 39 dairy workers were recruited from 21 small dairy farms in Lombardy region of Italy. All workers were asked to report the presence of musculoskeletal symptoms (MSS), and the anthropometric data were collected. As indicators of muscle activity we used: the Root Mean Square(RMS), the Amplitude Probability Distribution Function(APDF) and the percentage of Muscular Rest(MR) obtained by processing surface Electromyography data collected during working activities using Biometrics DataLOG (Biometrics, England).

Results and a conclusion : Dairy milking in Coloradan large herd operations demonstrated higher mean of Root Mean Square, 50th percentile APDF, and %MR than Italian small herd operations. The differences in RMS mean and 50th percentile APDF suggest that large herd dairy workers may suffer a musculoskeletal risk due to extended high average muscle activity (Jonsson, 1982). However, the lower %MR observed in the Italian workers suggests that they too are exposed to the risk of musculoskeletal disorders .

Dairy Worker Safety Training: Current Challenges and Opportunities for Enhanced Effectiveness

I. Noa Roman-Muniz, DVM, MS, John Rosecrance, PhD, Lauren M. Menger, MS, Florencia Pezzutti, MA, Flor Amaya, MV, Lorann Stallones, MPH, PhD

BACKGROUND:

The U.S. dairy industry relies heavily on immigrant Latino labor. This underserved population is exposed to a variety of safety risks, some inherent to their work environment. Factors that contribute to safety and productivity of dairy workers, including the quality of safety training programs, are not well understood.

OBJECTIVES:

The objective of this study was to identify dairy worker perceptions regarding barriers to and opportunities for enhanced safety and productivity.

METHODS:

Seven focus groups were conducted with Spanish-speaking employees on dairies in Colorado and South Dakota. The workers were asked to describe previous and current job experiences, communication with management, perceived importance of safety, and policies, procedures and safety training currently in place. Audio recordings of focus groups were transcribed and translated into English for data analysis, which consisted of open-coding by two researchers to generate a list of themes. Themes identified were inserted into the Contributing Factors in Accident Causation Model to assess factors relevant to safety and worker productivity.

RESULTS:

Forty-six workers participated in the focus groups and identified aspects of their work environment and job demands that influence their safety and performance. Factors identified by participants included workload and pressure to work fast, animal handling hazards, numerous environmental exposures, machinery and chemical hazards, lack of attention by management, communication barriers, cultural differences, and content, delivery method and extent of training. Workers identified a need for greater recognition, fair treatment, timely addressing safety hazards, transparent communication and comprehensive and ongoing safety training.

CONCLUSIONS:

The findings of this study provide valuable insight into dairy worker perceptions of the organizational, environmental, individual and social factors of their work that affect safety and performance. These findings should help inform the development of training programs to improve the safety and productivity of dairy workers.

Ergonomic challenges in modern milking parlors

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OBJECTIVES: Milking cows is coupled with awkward postures, repetitive movements, a cold, hot or wet working environment and many more risk factors for developing musculoskeletal disorders. Several international studies showed that milkers working in separate milking parlors display high levels of pain and disorders in the musculoskeletal system. The prevalence among females is significantly higher. Ergonomic design intends to reduce operator fatigue and discomfort. One of the challenges to fit worker and equipment in dairy parlors is the additional component of the human animal interaction.

METHODS & RESULTS: Precise investigations of parlor design showed a range of approximately 1 m to suit the body height of the worker regarding depth of pit and udder-floor distances and anthropometrics altogether. Horizontal distances add up to the vertical differences and range between 30 and 80 cm also exceeding the arm length of the workers in many cases. The weight of milking clusters also differs. The large variation within one parlor does not allow optimal work place design for each human-animal interaction. 70% of the cows within the optimal height were the best to achieve.

CONCLUSIONS: Technical measures available to reduce the workload are adjustable floors, service arms, indexing or automatic cluster removal. None of these technical aids is able to fully compensate the described variation. Therefore a combination of ergonomic equipment is necessary to reduce the workload. For new parlors more attention needs to be paid on the dimensions to reduce the distance between worker and animal. The needs of female workers should also get more attention.

The Quiet Indian Revolution in Italy´s Dairy Industry

Kathryn Lum

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OBJECTIVES:

This paper discusses labour migration from the Punjab region of India to Italy´s dairy industry. Based on anthropological fieldwork, it analyses how Indian immigrants have managed in a very short period of time to establish an economic niche for themselves as cow milkers on small dairy farms scattered throughout northern Italy. Indeed, it is estimated that Indian immigrants represent 90% of the workers in this sector.

METHODS:

Three main groups are interviewed (ethnographic methodology): employers, dairy workers, and the families of dairy workers (both spouses and children).

RESULTS:

This research reveals how Indians came to be favoured by Italian employers over other immigrant groups; how Indian dairy workers view their work and their future prospects; and the experiences of their family members, particularly of school-aged children who face stigma and prejudice from their classmates. It also discusses the strategies used by Indian immigrants to access this sector and explains how low-caste workers are disadvantaged by upper-caste social networks.

CONCLUSIONS:

It concludes by arguing that European migration policy also needs to make room for low-skilled labour in certain sectors of the economy. The belief that only highly skilled labour will lead to successful integration is contradicted by this research.

Occupational health and safety experiences in automatic milking

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OBJECTIVES:

Research indicates conventional pipeline and parlor milking exposes dairy farmers and workers to adverse health outcomes. In recent years, automatic milking systems (AMS), which typically reduce the labor requirement in milking, have gained much popularity in Finland and elsewhere. However, there is only limited information on the occupational health and safety issues in the AMS. We aimed to study the occupational health and safety experiences in AMS, compared to conventional milking.

METHODS:

An anonymous online survey was sent to all Finnish dairy farms with an AMS in 2014, one owner-operator from each farm. Previous work experience on conventional milking was an inclusion criterion for this study.

RESULTS:

Altogether 228 usable responses were received (25.2% response rate). The respondents had a total of 321 automatic milking boxes (range 1–5 per farm). The majority of the respondents found that AMS has brought flexibility to the organization of farm work, and it has increased leisure time, quality of life, productivity of dairy cattle work, and the attractiveness of dairy farming among the youth. In addition, it was found to significantly reduce the risk of occupational injuries and diseases as well as physical stress on the musculoskeletal system. However, training heifers to use automatic milking was emphasized as a high risk task that had resulted in several injuries. In addition, manual handling of reject milk and the daily cleaning of the AMS caused some physical stress to many farmers. In general, mental stress had either declined or remained the same after switching to AMS. However, some indicated increased mental stress because of the demanding management of the AMS. The majority perceived at least some mental stress due to occasional nightly alarms caused by the AMS and the lack of adequately skilled farm relief workers, hired labor, or both.

CONCLUSIONS:

Based on this survey, AMS has significant potential in the prevention of adverse health outcomes in milking of the dairy cows. However, certain characteristics of the AMS require further attention with regard to occupational health and safety.

Milking their Health

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OBJECTIVES:

The dairy industry is Victoria', Australia's largest rural industry, with a gross value of raw milk production of around $2.48 billion in 2010-11. The industry is mature, well resourced, well organised and internationally competitive.1 However, there is a lack of data and understanding of specific health statistics of rural farming populations. In 2005, 210 participants (109 men and 101 women) commenced a three year program, held across 11 separate locations. A recommendation was that further analysis of the study population be undertaken. This funding was received in 2010.

METHODS: Ethics approval was granted by South West Ethics Committee. Health assessments were conducted at the beginning of the workshop and required participants to fast for ten hours. Total cholesterol and blood glucose were measured, blood pressure taken, using both standard sphygmomanometer (as used in the original programs) and electronic sphygmomanometer. Height, weight, waist and hip circumference were also measured and body mass index (BMI). A single beam Omron™ Bioelectrical the health assessment to link in with the respiratory session of the workshop.

Pre and post knowledge surveys were also done to assess retention of health information and literacy.

RESULTS: In 2010, 71.4% (150 participants— 73 men and 77 women) of the original participants returned. Statistically significant changes over the 60-month (5 years) timeframe include improvement in systolic and diastolic blood pressure and decrease in cholesterol. Improvements were noted in blood glucose and waist circumference for women —not significant —but defied the normal aging process and decreased rather than increased. The results including health literacy will be discussed.

CONCLUSIONS:

This longitudinal study increases our understanding of what impacts farming family health and identifies measures to improve their health, wellbeing and safety. Many of the specific strategies to improve farming family health were provided by the farmers themselves.

Health of the Rural Population and workers

The current status of knowledge about risk of hemolymphatic cancer among farmers

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OBJECTIVES:

I will review the results of recent large population-based case-control studies conducted in Europe and the USA and the US Agricultural Health study to highlight possible agents responsible for the excess of specific lymphoma subtypes among farmers.

METHODS:

The largest case-control study on lymphoma conducted in Europe and the US agricultural Health study included a detailed occupational history, particularly concerning agricultural jobs. Agronomists and expert farm owners and supervisors helped in identifying the specific agents used for each crop by time period and study area. The specific job module for agricultural occupations included information on previous epidemics among the livestock and the disinfectants used to treat the animals.

RESULTS:

Because of the current low prevalence of agricultural workers in population-based studies, even large individual studies cannot reach the statistical power required to test associations with specific agents. However, the results of the European study showed a significant dose-related increase in risk of chronic lymphocytic leukaemia associated with use of organophosphates, with gliphosate, widely used as a herbicide, as a strong contributor among this class of chemicals. No association was observed with use of the herbicide 2,4dichlorophenoxy acetic acid (2,4D), while a possible role of 2-methyl-4-chlorophenoxyacetic (MCPA) was suggested, but could not be assessed. Organochlorine insecticides did not show and association. Contact with livestock showed a complex effect on risk of B-cell lymphoma subtypes, with protection against their development in adulthood when occupational and household contact started early in life.

The results of the US Agricultural Health study show that different specific chemicals, used for different purposes might be involved.

CONCLUSIONS:

While it seems that specific chemical agents might be implicated in the excess of hemolymphatic cancer among farmers, further large pooled analyses are warranted to identify them with greater precision.

Health of the Serbian rural population

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OBJECTIVES:

The right to health is one of the most important factors affecting the quality of life in rural areas. Residents of the villages, although exposed to greater health risks than the urban population, often have limited access to the health system. Due to the relatively poor transport infrastructure they have limited access to primary health care services and lot of difficulties in access to specialist services in secondary and tertiary health care institutions. It should be mentioned that rural population often needs more health care services than the population in the cities. Their increased needs are consequences of the heavy physical workload, usually longer than eight hours, work inappropriate climate conditions, exposure to pesticides, biological hazards and ultraviolet radiation. It should be noted that activities of rural population often includes dangerous tasks which leads to increased risk of occupational injuries and consequently increased use of health care services.

METHODS:

The health and burning problems of the Serbian rural population are explored and described using standardized questionnaires and public sources of data available.

RESULTS:

Life in the Serbian country side is characterized by a life in large households involving several generations and thus creates opportunities for intergenerational conflicts. Since in the countryside there are no clear boundaries between the living and working environment, family relations are knotted with relationships at work and may cause adverse health effects. A particular problem in rural areas is child labor, especially in some areas where there is a practice of including children in agricultural processes in which they are exposed to the same hazards and risks as well as adult members of the family.

CONCLUSIONS:

In order to solve some of the burning issues in providing adequate health care to Serbian rural population Serbian government should establish multi-sectorial managing board which will coordinate activities of different stakeholders.

The potential to detect and prevent health problems in the agriculture sector by using OHS data

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Background

In Belgium, agriculture is a small sector with average 2 employees per company. Remarkably, the proportion of non-family workers has increased from 4% in 1980 to 20% in 2013. Agricultural employees are medically followed-up yearly by Occupational Health & Safety (OHS) Providers because of exposure to pesticides, ergonomic hazards and noise.

Methods

We compared OHS medical data of 2700 agriculture workers with 260183 employees of other sectors to detect the main health issues for this sector. To illustrate the potential of OHS data to describe evolution of health problems, a multilevel analysis was performed with BMI data obtained between 1993 and 2014.

Results

Agriculture is a sector with mainly young male workers (68% versus 52% in other sectors). The consumption of medication was consequently lower (33,6% versus 47,9%) except for the following classes: respiratory (16,3% versus 15,0%), cardiovascular (33,6% versus 28,2%) and locomotor problems (19,0% versus 15,5%). Hearing loss was observed in 5,2% (versus 3,3%) workers and 11,2% (versus 9,1%) had an FEV1 < 80%. 21,6% suffered from hypertension (versus 17,7%). 55,2% did not practice sport (versus 38,5%), while 53,0% had a BMI >25 (versus 51,3%). BMI increased with age, but was largely dependent on gender and on BMI at start of employment. Increase in BMI was higher when BMI at start was high.

Conclusion

This study illustrates how OHS data can be used for the detection of agriculture-specific health issues, which are now being used for the implementation of a sector-oriented health surveillance program.

Heat stress, dehydration, and kidney function in sugarcane cutters in El Salvador – a cross-shift study of workers at risk of Mesoamerican nephropathy

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OBJECTIVES: An epidemic of progressive kidney failure afflicts sugarcane workers in Central America. Repeated high-intensity work in hot environments is a possible cause. The aim was to assess heat stress, dehydration, biomarkers of renal function and their possible associations. A secondary aim was to evaluate the prevalence of pre-shift renal damage and possible causal factors.

METHODS: Sugarcane cutters (N=189, aged 18-49 years, 168 of them male) from three regions in El Salvador were examined before and after shift. Cross-shift changes in markers of dehydration and renal function were examined and associations with temperature, work time, region, and fluid intake were assessed. Pre-shift glomerular filtration rate was estimated (eGFR) from serum creatinine.

RESULTS: The mean work-time was 4 (1.4–11) hours. Mean workday temperature was 34 to 36 oC before noon, and 39 to 42 oC at noon. The mean liquid intake during work was 0.8 L per hour. There were statistically significant changes across shift. The mean urine specific gravity, urine osmolality and creatinine increased, and urinary pH decreased. Serum creatinine, uric acid and urea nitrogen increased, while chloride and potassium decreased. Pre-shift serum uric acid levels were remarkably high and pre-shift eGFR was reduced (<60 mL/min) in 23 male workers (14%).

CONCLUSIONS: The high prevalence of reduced eGFR, and the cross-shift changes are consistent with recurrent dehydration and strenuous work in a hot and humid environment as the primary causal factor. The pathophysiology may include decreased renal blood flow, high demands on tubular reabsorption, and increased levels of uric acid.

Long-term cognitive problems after toxic inhalation incidents

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OBJECTIVES:

In agriculture there is a risk on toxic inhalation incidents through short but high exposure, e.g. to manure gases or pesticides. Both fatal and non-fatal cases occur and their emergency management is well described and strongly debated in the literature. But relatively few attention is given to the potential long-term neurotoxic health effects, although the risk of toxic or hypoxic damage to the nervous system is considerable, even after a latency period. We aimed to study long-term neurotoxic sequelae of toxic inhalation incidents with a focus on neuropsychological effects.

METHODS:

We reviewed the literature on long-term neurotoxic sequelae of toxic inhalation incidents and studied possible neuropsychological sequelae in a small group of workers evaluated after a toxic inhalation incident. These patients were evaluated through neuropsychological testing by the Dutch Solvent Teams because of persisting health problems. They had been exposed to either manure gases, hydrogen sulphide or some sort of pesticide.

RESULTS:

As expected from the literature, we found substantial cognitive defects in several cognitive domains in a subset of the evaluated patients. More often when the patients already experienced severe health problems immediately following the toxic exposure. A causal relation with the neurotoxic exposure seems probable, although it is not easy to rule out the influence of other factors, such as the psychological impact of the toxic inhalation incident.

CONCLUSIONS:

Toxic inhalation incidents may pose a substantial risk on long-term neuropsychological health problems. A more structured follow-up of workers who suffer from cognitive problems after acute toxic exposure is warranted. Further research is necessary to clarify the biological pathways and determine if and how psychological factors influence presentation and final outcome of these long-term sequelae.

Incidence Rates of Pelvic Organ Prolapse in Female Agricultural Workers in Japan

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OBJECTIVES

We conducted a questionnaire survey to clarify incident rates of pelvic organ prolapse (POP) and its' risk factors in female agricultural workers in Japan.

METHODS:

The subjects were selected from female members of the Japanese Agricultural Cooperatives aged 20-89 yrs. Main items of questionnaire were as follows; incidence of POP and POP related symptoms, numbers of child births, experiences of agricultural works and/or daily activities with abnormal abdominal pressure, etc. Cross tabulation and age adjusted logistic analysis were performed.

RESULTS:

The total subjects were 8407 (61.1±11.4 yrs.); among those, 34.3% for full-time farmers, 13.9% for part-time farmers and 51.8% for other occupation, housewives or no occupation (other group). The incidence rate of POP was 6.0% for total subjects; 6.4% for full-time farmers, 6.5% for part-time farmers, and 4.9% for other group. Significant higher incidences were seen in full-time and part-time farmers than other group ($p<0.001$ per each). The subjects with experience of abnormal abdominal pressure at least one time in a week were seen higher in the group with POP than those without POP ($p<0.001$). Result of logistic analysis indicated significant high odd ratios were seen in the items such as with constipation (odds ratio to be 1.67, $p<0.001$), number of child births (1.32, $p<0.001$), having abnormal abdominal pressure (1.29, $p<0.001$), BMI (1.23, $p<0.000$) and age (1.16, $P<0.059$).

CONCLUSIONS

The present research revealed the incident rate of POP was to be 5.6% for female population in Japan, showing significant higher rate in agricultural workers than in non-agricultural workers and housewives. The significant high odds ratio were seen in such items of constipation, number of child birth, having abnormal abdominal pressure, BMI and age. The present results indicate newly view point must be introduced to make preventive measures for incidence of POP in agricultural workers.

Promotion and coordination of health surveillance in agriculture in Mantua province

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OBJECTIVES: We conducted a systematic data collection which had the objective of describing, from epidemiological point of view the health status of a wide group of agriculture workers of a large agricultural territory in the North of Italy and evaluating the adherence of health surveillance protocols proposed by occupational physicians to those suggested by the Guidelines of Regione Lombardia published in 2009

METHODS: Medical history, including information regarding exposure to specific risk factors and fitness for work, was systematically collected from occupational physicians using a specific questionnaire submitted to 916 agriculture workers of the province of Mantua, during medical examination between March 2014 and March 2015. Data were subsequently processed by the Local Health Agency of Mantua and statistically elaborated by the Occupational Medicine Department of Cremona.

RESULTS: Agriculture has particular characteristics which can make difficult to perform health surveillance, comparing to other productive sectors and considering that most of the farms are family-owned, for which health surveillance in accordance with Legislative Decree 81/08 is currently on voluntary basis. There is also high fragmentation of the production on the territory, due to the reduced size of the farms. The collaboration of occupational physicians allowed us to investigate the health status of employees and seasonal workers that represent a small proportion of the population working in Italian agriculture sector. Based on information regarding health surveillance and fitness for work, it is also possible for us to say that health effects on agricultural workers coming from exposure to different risks that can be found in the production cycle remain still widely underestimated.

CONCLUSIONS: The activity provides a description of agricultural workers health status and represents a single experience in this field. This study offers a model for conducting in the future experiments that are aimed at increasing awareness of the need for health surveillance in agriculture.

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Exposure to organic dusts in rural settings

Organic dust contaminated with LPS is still the predominant exposure in animal breeding opreations

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A recent study (Basinas et al. 2015) have reviewed the literature during the past 30 years.

In spite of several studies showing clear adverse effects of this type of organic dust on the health of farmers, not much has happened with the exposures in farming over this time period.

The farming occupation is characterized by a large day to day and individual differences in exposure due to job tasks and type of animals.

The dust levels in farms seems to be independent on time trends unlike what is seen in other types of industry.

We need to focus on the sources of exposure within farming in order to ensure a healthy working life among livestock farmers, and the newest litterature seems to point towards possible targets for preventive interventions.

Quantifying Farmers' Exposure to Respirable Grain Dust while Performing Work around Grain Bin Storage Facilities

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Objectives

1. Determine time-weighted average (TWA) of respirable grain dust exposures for workers while unloading and cleaning grain bin storage facilities

2. Identify external variables that affect workers' TWA exposure

3. Determine prevention capacity of the N-95 respirator as adequate protection from grain dust

Methods

Ohio farms participated in a feasibility study whereby respirable dust samples were collected while farmers unloaded and cleaned their grain facilities. Air samples were collected using a battery-operated personal sampling pump with pre-weighed 37mm PVC cassettes filter cassettes. Farmers wore pumps 30 - 90 minutes while unloading grain, and 90 – 180 minutes while cleaning the bin. Workers were monitored for a 3-month period (June, July, August). Analysis for total respirable dust was calculated using gravimetric determination and compared to the NIOSH permissible exposure levels.

Variables were recorded during data collection: commodity type (soybeans or corn), moisture content of commodity, external weather temperature/humidity, and method of cleaning (auger, grain vacuum, shovel, etc).

Results

Data collection is currently ongoing. The following hypothesis are being confirmed:

1. Workers in grain bins are exposed to 50% of the U.S.'s permissible exposure level for total respirable particulates. The 50% level is critical because at this level (or higher), prudent safety management practices require workers to enroll in medical surveillance programs.

2. Cleaning grain bins with mechanized equipment generates more grain dust of the respirable size; likewise, bin design and size (bushel capacity) contributes to workers' exposure.

3. Efficacy of the N-95 respirator is suitable for use during grain bin unloading and cleaning activities.

Conclusions

This research was conducted to better understand the respirable dust exposure of farmers while working around grain storage facilities. Currently, farmers are recommended to wear N-95 respirators. This analysis project will confirm these recommendations, and increase farmers' awareness they are at risk of respirable dust exposure.

Prevalence of chronic respiratory symptoms, lung function impairment, and airway responsiveness - comparison between cow breeders and crop farmers

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Objective: To evaluate the frequency of respiratory symptoms, lung function test abnormalities and non specific bronchial hyperresponsiveness (BHR) among crop farmers and cow breeders, in relation with their severity and work-relatedness due occupational risk factors and farming characteristics. Methods: A cross-sectional survey was performed including 70 cow breeders aged 22 to 63 years (mean age=47.5±11.8; duration of exposure 23.1 9.6), compared to an equal number of crop farmers matched by age, job exposure duration, and smoking status. We have used a questionnaire to assess the chronic respiratory symptoms, detailed work history, specific farming activities performed, and smoking history. Evaluation of examined subjects also included lung function spirometry tests, and bronchial hyperresponsiveness testing (PC20 8 mg/mL). Exposure type, frequency and intensity in both groups were recorded by job exposure matrices. Results: Cow breeders had a significantly higher prevalence of cough (31.4%), phlegm (17.1%), wheezing (12.8%), and nasal symptoms (21.4%) than the crop farmers ($p<0.05$). All spirometric parameters (FVC, FEV1, FEV1/FVC%, MEF75, MEF50, and MEF25) were lower in cow breeders compared to the crop farmers, but statistical significance was confirmed only for MEF25, MEF50, and MEF25-75 ($p=0.03$, $p=0.04$, and $p=0.005$; respectively). The prevalence of non specific BHR, defined by histamine PC20 less than 8 mg/mL, was higher in cow breeders but without reaching statistical significance (21.4% vs. 15.7%). Cow breeders exposed more than 15 years had more severe adverse chronic respiratory symptoms and lung function decline. The risk of developing work-related respiratory symptoms increased significantly with full-time farming, exposure to gases and vapors, and more than 20 years of workplace exposure. Conclusion: Our results indicate that occupational exposure in cow breeders plays an important role in higher prevalence of chronic respiratory symptoms, lung function impairment, and development of airway responsiveness.

Key words: respiratory symptoms, farming, lung function, questionnaire, airway responsiveness.

Exposure to organic dust in a farrowing-weaning farm as a possible risk for human and pigs: One Health Approach.

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Objectives

Particulate matter, represents an important aerial contaminant in piggeries. A correlation between exposure to inert dust and disorders of respiratory function has already been demonstrated [(1,2)]. Our study aims to quantify the concentration of airborne dust in a farrowing weaning room, in order to evaluate the risk odds of manifesting respiratory diseases for workers and animals.

Methods

The concentration of Total Suspended Particles (TSP) and the Respirable Fraction of dust (RF) were measured in a farrowing-weaning room of a piggery located in Northern Italy. A 2-stage Lippman cyclone separates the dust particles, captured by a nitro-cellulose membranes. The environmental parameters (temperature, relative humidity and ventilation rate) were also measured.
Measurements were taken at day 0, 15, 30, 60 and 75 at three different measurement point (near the entrance, in the middle, at the end of the room). The membranes were collected every 30 minutes during each sampling day.

Results

Concentrations ($mg \cdot m^{-3}$) of TSP and RF in the room were reported in the following table (mean value of 24-h).

Sampling time (d)	TSP	RF
0	0.081	0.013
15	0.310	0.108
30	0.745	0.375
60	2.970	1.050
75	3.200	1.630

In human health the thresholds for inert PM and organic dust are 10 $mg \cdot m^{-3}$ and 4 $mg \cdot m^{-3}$ respectively [(5)]. The maximum PM concentration found in this piggery is above those thresholds. However, the current exposure limits can result to be barely protective, since even low exposure to dust with low reactivity or pathogenicity can lead to respiratory adverse effects. Allergen molds, bacteria, viruses are the major causes of respiratory problems both in human and animals. No dust characterization was conducted here, and an in depth analysis would be required to identify and quantify the "organic load" of dust.

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Environmental Health in Rural Areas

Across the globe: Healthy Farmers, Healthy Farms —The Sustainable Farm Families Project

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Background

A global issue facing agriculture is the health of its people. Farmers are ageing, working longer, and experience illness, injury and suicide at high levels. Family members also provide the labour needed to cope. In Alberta, farming is one of the most hazardous occupations and farmers are difficult to engage in health, wellbeing and safety issues.

The Sustainable Farm Families (SFF™) project was developed in 2003 in Victoria, Australia by health care providers, producer-groups, industry, and researchers to address health disparities. In June 2013, three representatives from Alberta, Canada travelled to Australia to investigate the SFF™ program, which had been successfully delivered to over 2300 farmers.

Methods

Theoretical frameworks from agricultural extension, health promotion, adult learning and behaviour change support the SFF™ model. In 2014 the Farm Safety Centre (FSC) received government funding to undertake SFF™ with Albertan farmers. A 5-day train-the-trainer workshop was held in Raymond, Alberta to train the nurses and agricultural facilitators in SFF™.

Results

SFF™ Alberta delivered 4 SFF™ workshops to 42 farmers from diverse operations. Participants were aged 26-76 years, 74% were male. An independent evaluation reported "The SFF Alberta workshops were theoretically consistent with SFF Australia." . Numerous health issues were detected, and farmers rated the SFF™ program very highly. Health indicators and risk factors from the year 1 pilot will be presented.

Conclusion

The FSC successful delivery of SFF™ illustrates repeatability and transference of SFF™ internationally and the opportunity to address farmer health globally through an evidence based program.

Mesothelioma and sinonasal cancer risk in agriculture

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OBJECTIVES: To identify malignant mesothelioma (MM) sinonasal cancer (SNC) cases and to describe sources of exposure to asbestos and other carcinogens among workers of the agricultural sector in Lombardy.

METHODS: Lombardy Region (North-West Italy) is covered by a MM registry (since 2000) and by a SNC registry (since 2008). The registries collect incident cases of these kind of cancers in people living in the region. Exposure to carcinogens (asbestos, wood and leather dusts, nickel and chromium compounds) is evaluated through a standardized questionnaire administered to the patient or next-of-kin. MM and SNC cases with carcinogen exposure exclusively in the agricultural and breeding sectors have been extracted from the registry database.

RESULTS: Out of 4680 incident MM cases recorded in the period 2000-2014, sixteen subjects (15 with pleural, 1 with peritoneal MM; 13 M, 3 F) have had a significant exposure to asbestos while performing rural activities. Median age was 69.6 (56.8-79.3) years, with length of exposure of 36.5 (4-52) and latency of 52.3 (33.8-65.7) years. Seven subjects had been exposed during maintenance activities of asbestos-cement roofs or asbestos brakes of the tractors; 7 used recycled jute bags for feed or cereals that previously contained asbestos; 1 used asbestos filters during wine production; 1 had been working in fields near a factory of asbestos ropes. Out of 337 SNC cases recorded from 2008 to 2014, 1 woman with squamous cell carcinoma of the maxillary sinus was identified. She was 59 years of age at diagnosis and had been exposed to wood sawdust for 2 years in a turkey farm. The latency period was 30 years.

CONCLUSIONS: Occupational cancer occurrence in agriculture is usually overlooked. Our findings suggest that a small but significant number of cancers do occurs even in this economic sector, in particular from asbestos exposure.

Improving the professional competency of Health Professionals – locating the 'lost tribe' in Farm Family Health

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OBJECTIVES:

This evaluative study follows on from previous work of Brumby and Smith (2009) and sought to understand if training and extension provided in working with farming men and women in rural Australia can lay claim to a broader and richer understanding of the health complexities of farm families. As well as improving and enhancing aspects of professional development of health professionals especially nurses. The Sustainable Farm Families Train the Trainer (SFFTTT) model is a 5 day national program designed by Western District Health Service, Hamilton, Victoria, Australia to enhance practice amongst health professionals working with farm families. Nurses completing this program are then supported to deliver the Sustainable Farm Families program in their communities.

METHODS:

This study revisited a diverse cohort of trained SFF health professionals who were trained over a five year period. A total of 120 Health professionals who completed the training were surveyed in order to discover how they had utilized knowledge and extended skills learned in the training and delivery of health education to farm families.. The responses were analysed and themed in order to create a deeper and more extensive understanding of the diversity and range of extended practice of health professionals.

RESULTS:

The results from this study highlight the unique effect that farm family focussed traning has had on nursing practice for those nurses who have engaged with both the initial training, and the delivery of the program in their own health service and the health professional's interpretation of enhanced practice in terms of their devloping confidence and competence.

CONCLUSIONS:

Providing a more comprehensive understanding of the intricacies of this area of practice may have a subsequent impact on farm families across Australia through more appropriately trained, and culturally competent health professionals. Until now nurses likened the farm family to the 'lost tribe' when seeking ways to engage them in health promotion action.

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Factors affecting sustainable solution for treatment of waste water treatment or small villages in the West Bank (Palestine)

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BACKGROUND: Small scale agriculture is still a main source of income and substantial food supply for many inhabitants living in villages in the semi- arid area of the West Bank (WB). Thus, in the past, several foreign agencies have tried to assist these villages in building waste water treatment systems (WWTS) in order to permit re-use of the effluents and prevention of environmental and health hazards. However, many of the systems either do not work or are poorly maintained.

OBJECTIVES:

1. To evaluate the current state of operation of WWTS in a sample of small villages in the WB.

2. To try and elucidate factors affecting success or failure of implementing these systems in the villages.

METHODS: A survey of a sample of villages was conducted, using a standardized questionnaire for interviewing various stake holders in the operation of the WWTS.

RESULTS: In most villages the first stage of treating WW is by a household septic tank. The effluents of the tank are, as a rule, discharged directly to a close-by creek, even in villages where communal WWTS exist,in many cases because of financial constraints.

In villages where the WWTS utilizes wasteland technology the systems operate continuously for many years. However, no further use is made of this scarce commodity. In contrast, in villages where anaerobic and or aerobic systems were built, most of them are either not functioning or poorly maintained, leading to limited possibilities of use of the effluents.

CONCLUSIONS: In order to provide a village with a sustainable WWTS that functions properly , factors such as participation of the villagers and the municipality, technical, professional and financial support, should be developed and guaranteed in advance, in order to provide effluents of high quality that can be used for intensive crops production for extended periods of time.

Tremolite asbestos exposure in a rural area: personal sampling campaign results

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Background

Rural areas on the Calabro-Lucano border, Southern Italy, are characterized by the presence of ophiolites outcrops containing tremolite. A study mapped the outcrops and assessed the exposure through environmental sampling of airborne asbestos fibers nearby towns, showing doses up to 22 ff/L.

Our study assesses the presence and level of personal exposure to inhalable asbestiform fibers in residents employed in occupational activities involving earthmoving and soil disturbance and other activities.

Methods

We recruited 30 volunteers including 20 employed in construction and agriculture and 10 employees working in other sectors not involving disturbance of the soil, and also five relatives of patients who died of pleural mesothelioma residents in areas with ophiolites outcrops.

Sampling was conducted over two days later in the summer.

The content and type of asbestos fibers were determined by technique of scanning electron microscopy (SEM) equipped with EDS (Energy Dispersive Spectrometer).

Results

The SEM analysis showed the presence of asbestos fibers serpentine type tremolite in 20 above 30 filters obtained by personal sampling. EDS microanalysis allowed to exclude titanium and organic material. The doses of tremolite fibers observed were between 0.8 and 23.06 ff/L. The environmental fund limit of 2 gg/L was exceeded in 50% of samples. 60% of farmers reported a personal exposure than 2 ff/L (from 2.07 to 23.06 ff/L) and 100% of construction workers (from 4.02 to 12.02 ff/L).

The five relatives reported exposure values from 0.8 to 6.07 ff/L, exceeding in three cases the limit of 2 ff/L.

Conclusion

90% of residents not employed in agriculture and construction has been exposed to doses of tremolite lower than the value of the fund.

The information campaign, aimed at a proper risk management, was useful. Health surveillance of resident population is needed.

Zoonoses in agriculture and rural areas

Hepatitis E virus infection in rural health: an emerging occupational risk?

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OBJECTIVES: Hepatitis E virus (HEV) infection is endemic in many developing countries, causing substantial morbidity.Transmission is primarily faeco-oral and is associated with both sporadic infections and epidemics in areas without drinkable water. In industrialised countries, HEV infection was thought to occur only in individuals infected in endemic areas. However, sporadic cases have been reported in persons from industrialised regions with no history of recent travel. Such reports and the availability of more comprehensive molecular and serological data have changed HEV epidemiology, accepting that autochthonous HEV is a problem in industrialised countries. Recently it has become clear that HEV is also an endemic disease in industrialised countries. Moreover, a porcine reservoir and growing evidence of zoonotic transmission have been reported in these countries, suggesting the possibility of occupational transmission to man. This review summarizes the current knowledge on the epidemiology and prevention of transmission of HEV infection in occupational settings

METHODS: The following keywords were used to explore PubMed: hepatitis E, disease, epidemiology, profession(al), occupation(al). The results were further screened and 107 publications were retained.

RESULTS: In nonendemic regions, seroprevalence varies from a few percent (2-7.8%) in Europe, Japan and South America to several percent (18.2 – 20.6%) in the USA, Russia, UK, southern France and Asia.

A meta-analysis of 12 cross-sectional studies evaluating potential association between HEV IgG seroprevalence in individuals occupationally exposed to swine showed greater odds of seroposivity in the exposed group but also a high degree of heterogeneity. The funnel plot suggests publication bias

CONCLUSIONS: There is a significant association between occupational exposure to swine and HEV IgG seroprevalence, but the level of prevalence detected depends also on the type of HEV IgG kits used. Further research, including on mechanisms and risk factors for infection, as well as the development of better serological tests for identification of infection, are required.

Zoonotic Pathogens are Occupational Hazards to US Livestock & Poultry Workers

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OBJECTIVES:

US food animal workers include those who raise, slaughter, and process animals for food. Those in processing are in a unique position in occupational health, due to their risk of exposure to zoonotic pathogens, and their subsequent risk of transmission of infection to other food products, as well as to their family and community members. Animals often arrive for slaughtering and processing contaminated with zoonotic pathogens, putting workers at risk for injury and infection. Currently, federal agencies such as the Occupational Safety and Health Administration (OSHA) and the National Institute of Occupational Safety and Health (NIOSH) do not consider these zoonotic pathogen exposures occupational hazards, leading to little data on the details of these risks.
Infectious skin diseases have been found to be the most common skin condition among Latino manual workers in North Carolina. Similar animal manufacturing industry settings have shown high rates of worker injuries and infections, such as the US pork industry, Chinese pork industry, and European poultry industry.

METHODS:
Currently no US standards or guidelines exist for surveillance of zoonotic pathogen exposure in livestock and poultry processing workers. Legal issues, such as undocumented worker status, complicate the reporting of injuries or dangerous working conditions. We outline a strategy to protect these employees by a series of: (1) coordinating with relevant stakeholders, (2) requesting that NIOSH complete a health hazard evaluation program of high risk plants, (3) crafting a model surveillance program, and (4) supporting the adoption of this model surveillance program via employers and union contract negotiators.

The prevalence of zoonotic chlamydial infection in farmers of Kyrgyzstan

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INTRODUCTION: Zoonotic chlamydial infection caused by Cl. psittaci is widespread in the animal world and characterized by persistent course and severity of disease in humans, and by high cost of expenses for carrying out anti-epidemic measures. In Kyrgyzstan, the prevalence of the infection in sheep was studied, but the prevalence in humans is not studied yet.

The aim of the study was to estimate the prevalence of persistent infection caused by Cl. psittaci.

METHODS: In 2002-2009, 420 farmers entered the Republican Clinical Hospital with suspected brucellosis is examined. ELISA is used to detect IgM and IgG-antigens in serum and polymerase chain reaction (PCR). Statistical analysis is done using EPI INFO.

RESULTS: Antibodies to Cl. psittaci were detected in 258 patients. Of these, 54.3% had antibodies to the antigen only Cl. psittaci, indicating for mono-infection of generalized zoonotic chlamidial infection. 118 patients (45.7%) had antibodies to antigens Cl. psittaci and brucella, indicating mixed infection. Analysis showed that the risk groups are persons of active working age - 20-40 years old, who made up 52% at chlamydial mono-infection and 63% at mixed infection.

Analysis of the data showed that brucellosis and chlamydial mono-infection are distributed in all regions of Kyrgyzstan. It was found 41% of patients with mono-infection had foodborne infection and 57% had contact transmission, and patients with the mixed infection in 80% of cases had contact transmission.

CONCLUSIONS: Studies have shown relatively high prevalence of chlamydial infection among the farmers in the country. There is a need for effective control measures to identify the source of the infectious agent and conducting complex measures to prevent further human zoonotic chlamydial infections and brucellosis among farmers and the rural population.

The level of tetanus immunity in the agricultural workers in Lombardy Region, North of Italy

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OBJECTIVES: Tetanus which is a vaccine preventable disease still is significant health concern and continues to take lives worldwide. From last decade, Italy had the highest rates of tetanus reported cases among European countries. The objectives of this study were assessment of the level of immunity against tetanus among agricultural (Italian/ non-Italian) workers of the Region and their knowledge regarding their previous vaccination.

METHODS: The study was conducted in agricultural enterprises covered with occupational health surveillance at the workplace in the region of Lombardy, Italy. Blood samples of 743 (481 Italian and 262 non-Italian) workers, were collected in the frame of Occupational Health surveillance activities in five provinces of the Lombardy Region and concentrations of antibody to tetanus toxin (anti TT) in sera were measured by an enzyme-linked immunosorbent assay. Meanwhile during the survey it was asked to workers if they remembered to be vaccinated against tetanus and also about the vaccination time.

RESULTS: In our survey nearly half of the Italian workers declared that they had vaccination (52.9%) versus 27.8 % of migrantsa. In addition, Italian workers had better tetanus Medium/ long term protection (79%) compared to non-Italian workers (54.2%) and this difference was statistically significant ($P < 0.01$, chi square test). Results of the multivariate regression showed among independent variables nationality and age were significant predictors ($P<0.01$) regarding to dependent variable (anti TT titer).

CONCLUSIONS: This study supports the recommendations of including in any programme of health surveillance of workers the need of dealing with tetanus immunization, considering in particular migrant workers and the elderly, who might have not received a booster dose in time to maintain a good coverage. Even though the gold standard in the decision making process is represented by antibody titre determination, when this cannot be done, for example for seasonal and temporary workers, the performance of a booster dose is the most appropriate solution, able to ensure an adequate coverage.

The Status and Epidemiological Characteristics of Zoonoses in Korea

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OBJECTIVES: Zoonoses arise from infections transmitted from vertebrate animals to people. I aimed for understanding the scope and the epidemiological characteristics of zoonoses in Korea. I will introduce some seroprevalence studies in high risk groups of zoonotic diseases.

METHODS: I used the disease web statistics system of Korea Centers for Disease Control and Prevention. Also, I reviewed many articles and books about zoonoses in Korea.

RESULTS: Beginning with the first confirmed case of leptospirosis in 1984 followed by Q fever in 1992, Lyme disease in 1993, cryptosporidiosis in 1995, tularemia in 1997, enterohemorrhagic Escherichia coli in 1998, brucellosis in 2002, botulism in 2003, and severe fever with thrombocytopenia syndrome in 2013, several outbreaks were confirmed. Korea has suffered from reemerging diseases such as Vivax malaria along the Demilitarized Zone (DMZ) since 1993. In 2014, the number of incidences of zoonotic notifiable diseases was 8,130 cases with scrub typhus, 344 cases with hemorrhage fever with renal syndrome, 638 cases with malaria, 111 cases with enterohemorrhagic E. coli, 58 cases with leptospirosis, 55 cases with severe fever with thrombocytopenia syndrome, 9 cases with murine typhus, 17 cases with brucellosis, 26 cases with Japanese (B) encephalitis, 11 cases with Q fever and 13 cases with Lyme disease.

In the 14 years between 2001 and 2014, imported zoonotic notifiable diseases had 1,081 cases with dengue fever, 671 cases with malaria, 14 cases of Lyme disease, 5 cases of melioidosis, 3 cases of chikungunya fever and 1 case of West Nile virus.

CONCLUSIONS: Korea has experienced sporadic cases or outbreaks of emerging and reemerging zoonotic infectious diseases since the 1980s. No accurate statistics have been compiled on the prevalence of zoonoses in rural communities. More education about transmission and prevention of zoonoses is needed for Korean people, especially farmers.

Biological hazards among meat industry workers

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BACKGROUND
The Italian meat supply chain is a large-scale industry typically characterized linked to circuit of DOP (Protected Designation of Origin) products.
In this reality all workers are exposed to a wide range of biological agents that have developed antibiotic resistance and, therefore, represent a public and occupational health issue.

METHODS
An anamnestic semi-structured interview was performed to the study participants, in order to better define the risk exposure, which was followed by physical examination of the skin and skin appendages.
Samples of nasal swabs were sown, within 24 hours, in Mannitol Salt Agar growth medium, specific for the detection of Staphylococcus Aureus.
After an incubation period, we selected positive colonies for S. aureus in order to undergo genetic tests to detect the presence of MRSA.
MRSA positive samples were analyzed, at last, with a specific PCR for the ST398, swine specific sequence type.

RESULTS
162 workers joined the study, which was performed a physical examination of hand skin, a nasal swab and then given an anamnestic semi-structured interview.
The sample was composed of 139 males and 23 females, mean age 45 years, with average seniority of 10 years.
From 162 nasal swabs championships, a first analysis of culture media for Staphylococcus Aureus showed 35 positive (21.6%).
The molecular analysis revealed only one MRSA sample, belonging to a butcher's meat processing company. (0.6%).
The molecular analysis did not confirm the positivity for genotype 398, which characterizes the infection in pigs.

CONCLUSION
Recontamination with Staphylococcus Aureus occurs via surface treating machinery, as a result of fecal contamination at evisceration, or via increased human handling during meat processing.
Our study revealed a low risk for MRSA, because of superficial heat treatments such as scalding and flaming that reduce significantly the burden of MRSA on the carcasses.

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WMSDs and Occupational Health

Agricultural machinery injuries in Finland 2004-2014

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OBJECTIVES:

Machinery is a major source of injuries in agriculture. The "Koneturva" [machinery safety] project assessed injury risks related to agricultural machinery. We aimed to describe the characteristics of injured persons; circumstances, work activities, and sources associated with the injury events; as well as lost time and cost of machinery injuries.

METHODS:

We obtained claims information from the Finnish Farmers Social Insurance Institution (Mela). The data covered a ten-year period, Jan 2004 –Sep 2014. During this time, the number of farms reduced from 63,847 to 50,201, and the number of insured farmers reduced from 92,569 to 70,448. Frequency distributions of the variables were calculated and additional information was obtained from injury descriptions.

RESULTS:

The estimated number of all injuries to farmers during this time was 56,000. The number of injuries caused by machinery was 11,327. During the 10-year period, the proportion of machinery injuries grew from 19% to 24%. The average compensation amount of machinery injuries was 3796 Euros per case, and the average disability duration was 32.6 days. While 33% of the farmers were women, only 8.6% of the machinery injuries occurred to women. Nearly 1/3 of the injuries happened during maintenance and repair of machinery. Age, years farming, farm income, incident date and time, work activity during incident, type of machine involved and other variables were analyzed from the 11,327 injury cases.

CONCLUSIONS:

Injuries can be prevented by effective guarding and safety devices, and limiting the use of older unsafe machinery. Attention to safety in the design of new machinery and safety information given to users in operator's manuals and other communications is also important in reducing machinery injuries.

Common risk factors for agricultural injury

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OBJECTIVES:

The objective of this study was to review the available literature and identify common risk factors for agricultural injury.

METHODS:

We conducted a systematic review of research studies evaluating agricultural injury risk factors. Studies that reported adjusted odds ratio (OR) or relative risk (RR) estimates were identified from PubMed and Google Scholar. Pooled estimates were calculated for frequently reported risk factors using meta-analysis.

RESULTS:

A total of 441 studies were found in the PubMed searches. Of these, 132 met the selection criteria for injury outcomes, and 32 of these reported adjusted OR or RR estimates. Google Scholar searches yielded 285 studies; 78 met selection criteria, but all were already included among studies found in PubMed searches. One study was excluded as it did not meet our set Newcastle-Ottawa Scale quality criteria, and therefore 31 studies were used for meta-analyses. The pooled ORs for the risk factors were: male gender (vs. female) 1.68, full-time farmer (vs. part-time) 2.17, owner/operator (vs. family member or hired worker) 1.64, regular medication use (vs. no regular medication use) 1.57, prior injury (vs. no prior injury) 1.75, health problems (vs. no health problems) 1.21, stress or depression (vs. no stress or depression) 1.86, and hearing loss (vs. no hearing loss) 2.01.

CONCLUSIONS:

All evaluated factors except health problems significantly increased the risk of injury, and they should be: a) considered when selecting high-risk populations for prevention efforts, and b) considered as potential confounders in designing intervention studies.

Keynote lectures- 10th September 2015

The IARC Monographs, evaluations of the carcinogenicity of pesticides and on-going research

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The IARC Monographs identify causes of cancer in the human environment, including chemicals, mixtures, personal habits, drugs, biological and physical agents. Since its inception in 1971 the Monographs programme has evaluated over 950 agents, with more than 100 classified as carcinogenic to humans and over 350 as probably or possibly carcinogenic to humans. The process of causal inference used for IARC's evaluations is defined in the Preamble to the Monographs. International Working Groups of invited experts evaluate human, animal and mechanistic evidence and reach a consensus evaluation of carcinogenicity for each agent. First, human and animal cancer data are evaluated separately, with the weight of the evidence for causation being categorised as Sufficient, Limited, Inadequate, or Suggesting lack of carcinogenicity. For the overall evaluation of carcinogenicity, the Working Group considers the totality of the evidence and assigns agents to one of 5 groups: 1 Carcinogenic to Humans; 2A Probably carcinogenic to humans; 2B Possibly carcinogenic to humans; 3 Not classifiable as to carcinogenicity to humans, or 4 Probably not carcinogenic to humans. Mechanistic evidence has an increasing role in overall evaluations and strong evidence can be used to upgrade or downgrade an overall evaluation. The synopsis of procedures and strategic directions of the Monographs programme will be illustrated by an overview on evaluations of the carcinogenicity of pesticides with a particular focus on some recent evaluations.

Research gaps on carcinogenicity of pesticides can be addressed in AGRICOH, an international consortium of cohort studies of agricultural exposures. AGRICOH comprises more than 20 cohorts from 5 continents, with a broad definition of agricultural settings and exposures. The pooling of cohorts together with enhanced and harmonized exposure assessments allows to study cancer and other adverse health effects in association with a wide array of agricultural exposures.

UV induced Skin Cancer and Eye effects: neglected occupational risks!

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OBJECTIVES:

Solar Ultraviolet Radiation (SUVR) represents a well known, even if largely underestimated, occupational risk: more than 20 million outdoor workers are exposed in Europe.

SUVR exposure depends on various environmental and individual factors, such as atmospheric composition, geographic factors, meteorological conditions, type of surface, and individual characteristics, including behavioral.

SUVR can induce both short and long-term adverse effect. According to WHO, short-term effects include sunburns and photodermatoses in the skin, photokeratitis, photoconjunctivitis and solar retinopathy in the eye, and reactivation of latent herpes labialis infections in the immune system. Long-term adverse effects are photoageing, solar keratosis, non-melanoma and melanoma skin cancers in the skin, pterygium, cortical cataract and epithelial corneal and conjunctival cancers. As precursor to manifest skin cancer lesions in body areas directly exposed to the sun, chronic actinic damage will occur and should thus be objective to screening investigations in risk professions

METHODS:

An overview of current knowledge, recently developed diagnostic tools, dosimetry and risk assessment will be given.

RESULTS:

So far, there are no sufficient health and safety regulations regarding solar UVR in Europe. The European Directive 2006/25/EC defines limits only for artificial UV (30 Joule/m2 - effective radiant exposure/day): in outdoor workers (OW) these are very frequently exceeded, as shown by recent studies showing Standard Erythemal Doses (SED) ranging from 6.11 to 28.6 SED (1 SED =100 J/m2) in farmers, construction and maritime workers.

CONCLUSIONS:

Considering the relevance of the risk related to SR exposure, further research on adequate methods to evaluate exposure, especially in OW, and on adequate preventive measures, is needed An awareness campaign, directed at policy makers and the public is presently successfully putting this vastly neglected occupational risk on the map of work protection and prevention.

Biological monitoring of Pesticides Exposure in Rural Areas

Blood Cholinesterase Activities over Two Years among Latino Farmworkers in the United States: Pesticide Exposure Evidence and Health Implications

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OBJECTIVES: (1) To describe patterns of cholinesterase activities across the agricultural season, comparing migrant farmworkers and non-farmworkers; and (2) to explore differences between farmworkers' and non-farmworkers' likelihood of cholinesterase depression.

METHODS: Venous blood samples from 210 Latino male farmworkers and 163 Latino male workers with no occupational pesticide exposure collected eight times across two agricultural seasons were analyzed for whole blood total cholinesterase, acetylcholinesterase, and butyrylcholinesterase activities. Mean cholinesterase activity levels and depressions ≥15% were compared by month, with the two years combined.

RESULTS: Compared to non-farmworkers, farmworkers had significantly lower total cholinesterase and butyrylcholinesterase activities in July and August, and significantly lower acetylcholinesterase activity in August. For total cholinesterase, farmworkers had almost four-fold greater odds of depressed cholinesterase activity in August and one and a half times greater odds overall, compared to non-farmworkers. For acetylcholinesterase, the pattern was the same. For butyrylcholinesterase, farmworkers had two-fold and three-fold greater odds of depressed cholinesterase in July and August, respectively, and more than one and a half times greater odds overall. Odds ratios were highest (3.13-3.8) in the month of August for each cholinesterase activity without considering recent residential exposures, and remained highest in August (2.8-3.33) when residential exposures were included in the model.

CONCLUSIONS: Baseline cholinesterase activities can rarely be established for migrant farmworkers, as their risk of exposure is constant. In the absence of acute poisonings, it is difficult to document exposure to non-persistent organophosphorus and carbamate pesticides. These analyses show consistent seasonal patterns of exposure over two years and significant contrasts with cholinesterase activities in non-exposed workers. This provides evidence that farmworkers experience pesticide exposure, despite US regulations intended to protect workers. As results from other studies show linkages of chronic, low-level pesticide exposure with neurodegenerative diseases, cancers, and other health outcomes, more effective protections for farmworkers are needed.

Comparison of persistent symptoms and cholinesterase levels in laborers in three stages of the agricultural process

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OBJECTIVE:

To identify differences between erythrocyte cholinesterase levels, hemoglobin and persistent symptoms in laborers in three stages of the agricultural process

METHODS:

Three studies were conducted in an agricultural company in northwestern Mexico. The first study was done at the beginning of the season. The second during the planting and pruning, each one included 106 workers. The third was held in the collection stage and included 172 workers. During the first baseline measurement of biological indicators were performed, a questionnaire was used to assess socio-demographic characteristics, diseases and 19 symptoms which have been associated with cholinesterase inhibiting pesticides. The symptoms were classified into: non-specific, probable and specific. We considered persistent, those who remained in the last 15 days. For the measurements two and three, the same procedures were repeated, further evaluation of working conditions and exposure to pesticides were added. SPSS for analysis was used.

RESULTS:

In the first, second and third measurement, there were significant decreases in cholinesterase and hemoglobin ($p < 0.001$), but there were within normal ranges. The prevalence of persistent symptoms was 37.7%, 51.8% and 62.2%, respectively, $p < 0.05$. There was an increase in the number of symptoms per worker. We didn´t find statistical association between symptoms and cholinesterase levels, but we found it among symptoms, frequency of pesticides application, re-entry time, hours of work per week, use of personal protective equipment, work clothing change and shower after work day ($p < 0.05$). The risk of symptoms was 55% higher in the most exposed to pesticides workers.

CONCLUSIONS:

The increased frequency of persistent symptoms and their relation with exposure to pesticides and poor working conditions was evident. However, as has been observed in other studies, it was not associated with cholinesterase levels.

Health effects related to pesticide exposure and blood cholinesterase activity among elderly farmers in northeastern Thailand

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OBJECTIVES: The number of Thai elderly workers is increasing, especially agricultural workers. Elderly may be more sensitive to pesticides. However, studies on health effects related to pesticide exposure in elderly farmers are limited. This study aims to determine pesticide-related symptoms and blood cholinesterase activity among elderly farmers in rural areas.

METHODS: A cross-sectional survey was conducted in April 2015 at Huaruea Subdistrict, Mueang District, Ubonratchathani Province, the large agricultural area in the northeast that mainly cultivated chili. A total of 30 elderly farmers (aged ≥ 55 years) directly exposed to pesticides was recruited and interviewed. Blood cholinesterase (ChE) levels, including erythrocyte cholinesterase (AChE) and plasma cholinesterase (PChE) were measured with the Test-mate ChE (Model 400) [1]. For interpretation and treatment, if ChE levels were less than 50% of the normal value, it indicates abnormal level that means possible pesticide poisoning requiring removal from exposure and/or treatment. [1] [2] [3]

RESULTS: Farmers had an average age of 60.5 (±7.3) years (age range: 55-83 years). Most were males (60.0%) and some had chronic diseases (20.0%). All of them grew chili and of 60.0% also cultivated various vegetables. Their working experience ranged from 5 to 40 years. They involved in mixing or loading (86.7%) and spraying pesticides (93.3%) as well as applying chemical fertilizers (100%). Most farmers reported using pesticides 2 times/month (53.3%). Common pesticides used were chlorpyrifos, profenofos and carbamates. About 36.7% farmers had adverse symptoms after working with pesticides (i.e. Headache, dizziness). The mean AChE and PChE levels were 2.65 (±0.77) and 1.50 (±0.58) U/ml, respectively. The prevalence of abnormal level was 46.7% for AChE and 36.7% for PChE.

CONCLUSIONS: Elderly farmers may get risk on AChE and PChE depression leading to pesticide poisoning. Provisions of medical monitoring programs and preventive measures to reduce pesticide exposure among elderly farmers are recommended.

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Urine and hair specimens for biomonitoring short and long term penconazole exposure

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OBJECTIVES:

Penconazole (PEN) is a fungicide widely used in vineyards. Objective of this work was the identification of urinary metabolites for biological monitoring of occupational exposure (1). We also assessed the ability to use hair matrix to evaluate long-term exposure to PEN.

METHODS:

Urine samples from 21 vineyard workers exposed to PEN during mixing and loading, application and re-entry were analyzed by LC-MS/MS to obtain a profile of candidate metabolites. Based on the presence of the triazole moiety in the full scan mass spectra major candidates were found. From their mass spectra hydroxy and carboxy-penconazole (PEN-OH and PEN-COOH), both as free molecules and as glucuronide conjugates, were identified (2). Urine samples were submitted to hydrolysis with glucuronidase to obtain the free chemicals,that were quantified. Hair samples of pre and post-exposure (PRE and POST-EXP) were analyzed. PEN in hair was desorbed with acetonitrile for 3 hours at 45°C and extracts were analyzed by LC-MS/MS.

RESULTS:

PEN-OH was the most abundant metabolite, with mean concentration about 3-fold higher (from 1.3 to 16.8) than PEN-COOH and a wide inter-subject variability. In investigated subjects mean levels in 24 h post-exposure urine samples PEN-OH ranged from 1.3 to 258 µg/L and PEN-COOH from 1.0 to 20 µg/L. Excretion of PEN metabolites increased with consecutive work shifts. Urinary metabolites were correlated with the potential and actual dermal exposure assessed measuring PEN on the work clothes and on the skin, with Pearson r up to 0.543. Median level of hair PEN were 0.010 and 0.060 ng/mg hair in PRE and POST-EXP samples respectively (p=0.005).

CONCLUSIONS:

Our results suggest that PEN-OH in post-exposure urine sample and hair PEN are promising candidate for biomonitoring short- and long-term exposure to PEN in agriculture workers.

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Biological Monitoring on Green house workers in Yazd Province, Yazd, Iran

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Abstract

Background and aims: Organophosphate compounds are the most popular insecticides with the widespread application in pest control. These toxic compounds interfere with the blood cholinesterase and inhibit the cholinesterase activity. Measurement of Cholinesterase activity is widely used for diagnosis of poisoning and adverse effects caused by pesticides. Green-house workers are one of the important occupational groups with the high risk of poisoning with organophosphate and karbamat pesticides .The purpose of this study was to assess the exposure of green-house workers with anti-cholinesterase toxic compounds by measuring the blood cholinesterase activity using electrometric method.

Methods: This research is a descriptive cross sectional study that carried out on farmers of the cucumber green-houses. In this study, 40 workers were selected and their blood cholinesterase enzyme activity were measured using electrometric method. In electrometric method the reduction of cholinesterase activity can be measured through recording the changes of blood pH induced by anticholinesterase agents. The results were analyzed by version16 of spss software.

Results: Based on the obtained results the amount of erythrocyte cholinesterase enzyme inhibition was

between 1.77% to 35.4% and the mean and standard deviation was 23.2% ±9.68. Similarly, the amount of plasma cholinesterase enzyme inhibition was between1% to 28% and the mean and standard deviation was equal to 16.57 ±7.92. Following the analysis of results 25% (n=10) of the workers were identified with no poisoning, 17.5% (n = 7) with minor poisoning, 55% (n=22) with moderate poisoning and 2.5% (n=1) with severe poisoning.

Conclusion: Organophosphate poisoning has been reported as the third cause of poisoning and also the leading cause of poisoning deaths in our country. Therefore, considering the results of this research and the importance of the evaluation of workers exposure to organophosphate pesticides it can be stated that the use of electrometric method is a valuable tool for biological monitoring of exposed populations. As this method is simple, portable and not expensive and at the same time provides high precision, it has a potential to be applied for screening and early diagnosis of organophosphate poisonings inlarge-scale studies.

Keywords: Anti-cholinesterase pesticides, Biological monitoring, Green house workers, Occupational exposure.

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Psychosocial health risk & workforce ageing

Health promotion for aged rural workers. The European study Prohealth65+

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OBJECTIVES: Europe has 12 million full-time farmers. Around 30% of them are older than 65 years. They continue to work on their holdings beyond the normal retirement age. Next to this people, but not mixed with them, there are migrant and seasonal farm workers, one of the most underserved and understudied populations in agriculture. Farming is one of the most dangerous occupations in Europe. Potential farm work-related health problems include accidents, musculoskeletal and soft-tissue disorders, pesticide-related illnesses, dermatitis, noninfectious respiratory conditions, reproductive health problems, climate-caused illnesses, communicable diseases, bladder and kidney disorders, eye and ear problems, cancer and mental health problems, including suicide. In addition, migrant and seasonal farm workers are exposed to health consequences of poverty, substandard living conditions, language and cultural barriers, and impaired access to health care. Few epidemiologic studies exist of these occupational health problems. Health promotion in agriculture is essential to ensure sustainability.

METHODS: Defining effective methods of promoting healthy lifestyle, identifying institutions and organizations which promote health of the elderly in Europe, and analyzing the general cost of health promotions activities, is the specific task of the study "Pro-Health 65+. Health promotion and prevention of risk - action for seniors" funded by the EU-CHAFEA. Within this framework, a comprehensive review of the literature helped to identify institutions and companies that actively promote the health of aged workers. At the end of the survey, an inventory of activities performed in the workplace in European countries will be available and will allow comparisons and choice of best suitable practices.

RESULTS: Preliminary results show that health promotion is much more practiced in services and industry than in agriculture. Health promotion methods targeted to rural aging people in Europe will be selected and analyzed in order to assess their impact on the health status of selected subgroups of the population (i.e.: migrants, women, ethnic or religious minorities).

CONCLUSIONS: Promotion programs targeted to increase age-related adaptations of healthy older adults, enhancing their experience and compensatory behaviors and information processing strategies, can minimize many age-related deficits and may allow older farmers to continue working safely and productively well past typical retirement age.

Emerging issues related to workfoce aging and the EU ECapacit∞ Project

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OBJECTIVES: The issue of an ageing workforce is true for a growing number of EU Member States and high on their political agendas. The European reality is that many employers and workers will soon realize that they will benefit more from working into their late sixties or early seventies, than they would from retiring before then. Apart from financial rewards, employment often gives one the chance to masternew skills and achieve a sense of meaning. Fifty years of age is roughly the time, by which an average worker gains a handful of competences and practice. The general objective of the 'e-CAPACIT8' project is to strengthen the capacities of European occupational health professionals (OHPs), so that they can facilitate the process of workers' ageing. The primary objective is built on four specific objectives (SOs) and contains 7 work packages (WPs).

METHODS: The e-CAPACIT8 project was co-founded by the European Commission (the Consumers, Health, Agriculture and Food Executive Agency, CHAFFA), more precisely by the Health Programme of the European Union, and by each associated partner of the project Consortium for the project life-time spanning from February 2013 to May 2016. The project is co-ordinated by the Polish research institute – the Nofer Institute of Occupational Medicine – and involves associated partners from 13 countries. The project also involves national experts (Collaborating Partners) who support the project through their expertise.

RESULTS: During the project period the following deliverables related to the WPs were produced: two interim and final reports, Project promotional materials to include project start- up dissemination pack , stakeholders' database, Reports from the national workshops (In order to fine-tune all educational materials as well as promote other deliverables, the project team have organized a series of national workshops (one per country, including Italy). Draft and final versions of training materials, Beta and final version of the e-learning platform, End user survey and user commitments.

CONCLUSIONS: Expected outcomes of the project are as follows: Integration of OHPs into the contemporary practices of older (50+) workers' health protection. A forward-looking, under the "e-CAPACIT8" project, would be of interest to a multitude of national as well as international stakeholders. Providing specific educational materials (the e-learning platform) for OHPs from across 13 European countries to strengthen their capacities to improve the health of the ageing workforces. Improved quality of Stakeholder's (OHPs) daily encounters with older employees.

Alcohol-related morbidity in a rural area in Germany

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Background: Alcohol consumption accounts for a high burden of disease, in particular in rural areas. The population of West Pomerania in North-East Germany is characterized as a population at risk with a high prevalence of behavioral risk factors including alcohol consumption. This is reflected by a high proportion of patients being admitted to general hospitals due to alcohol-attributable diseases, but also by high levels of alcohol consumption and a high burden of disease due to subsequent morbidity including fatty liver disease (FLD) and hypertension in the general population. The aim of the present study was (a) to provide data on alcohol-attributable diseases in general hospital inpatients with alcohol problem drinking and (b) to investigate the association of FLD with hypertension in a general population sample.

Methods: We used data from a randomized control trial including data from 846 inpatients aged 18 to 64 years with alcohol problem drinking and data from a population based cohort study encompassing 3191 adults aged 20 to 79 years.

Results: Analyses showed that 46.8% of the general hospital inpatients had a disease attributable to alcohol consumption. Data from the general population study revealed that FLD was associated with hypertension at baseline and at five-year examination follow-up. For example, the chance of hypertension at both time points was threefold higher in individuals with FLD (OR 2.8, CI 1.3-6.2; OR 3.1, CI 1.7-5.8, respectively) compared to individuals without FLD.

Conclusions: In view of the high proportion of general hospital inpatients with alcohol-attributable diseases, a screening procedure for problem drinking is needed followed by appropriate intervention strategies. The results regarding FLD and its association with hypertension demonstrate that it is important to pay attention to alcohol-attributable diseases in the general population and that alcohol-attributable diseases are associated with subsequent serious sequelae.

Mentally challenging for farmers to apply advanced technology and automated systems?

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OBJECTIVES:

The project aimed to study how farmers and workers experience working with advanced technology and automated systems in their daily work. The hypothesis was that even though you have advanced technology and automated systems it is not necessarily equal to a good work environment, increased work efficiency and flexibility in the daily work.

METHODS:

The study comprised two farms with crop production and two farms with automatic milking in Southern Sweden. Ten people were interviewed on the four farms during the period from March 2012 to July 2013.

RESULTS:

In general, the interviews at the crop production and dairy farms focused on similar themes 1) Problematic and challenging technology 2) Difficult administrative systems 3) Large amounts of data information generated by the technology 4) The art and difficulty learning new technology 5) The availability of training and support 6) The value of operational safety and alarms 7) A work in change. The interview results showed that both the crop production and dairy farms had a high degree of mechanization. However, the machines, equipment and administrative systems were not as technically advanced as expected, and the participants did not use all the available operations. However, the interviewees considered that they used the most beneficial operations close to 100%. The interviews also revealed that advanced technological equipment and automated systems are seen as both an opportunity and a challenge. The technology allows for more accuracy and efficiency in daily work, it makes the work less physically strenuous and it gives more space for spare and leisure time.

CONCLUSIONS:

The challenges consisted in not compatible systems and programs and difficulties interpreting data. In addition, the technology can be complex to handle and operate. The technology can also be a mental strain when it is not working as expected. The nightly alarms causing disturbed sleep and a working day without an apparent ending were the most challenging for the dairy farmers and workers. However, machine or computer breakdown always disturb the daily work especially if you are short of spare parts or cannot get in contact with the service center.

Environment Safety, People Health Protection and Welfare

Poisonous bites and stings: a natural risk in the natural environment

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OBJECTIVES: To describe clinical aspects and medical management of poisonous bites and stings in farmers and fishermen. METHODS: A five years (2010-2014) retrospective study concerning the Pavia Poison Centre (PPC) experience on poisonous bites and stings in farmers and fishermen was performed.

RESULTS AND CONLUSIONS: Outdoors occupational setting may expose workers to the risk of potentially venomous animal (bites/stings) and each activity has specific risks. In PPC experience, farmers and ranchers are the most commonly exposed to the risk of viper bite, while fishermen to the risk of venomous marine organisms stings (e.g. Trachinidae, Scorpaena, sea-catfish). Among snake bites, viper envenomation is the most considerable event and may be characterized by severe local/systemic symptoms with an estimated mortality up to 1%. In our experience, patients requiring antidote treatment were among 40%, and no fatal cases were registered.
In both categories (farmers and fishermen), hands and feet are the most injured parts of the body (the latter are particularly associated with stingrays); however, in the case of stingrays a chest injury was also reported. As pre-hospital management in cases of viper bites, the immobilization of the involved limb is indicated as general medical practice, while in case of Trachinidae stings specific treatment including hot water immersion and wound exploration are indicated. These treatments are effective in case of fish sting (but not when jellyfish or sea urchins and other invertebrates are involved) in addition to topical treatments, as antitetanus prophylaxis and antibiotics.
Rarely PPC managed patients envenomed by exotic animals, such as Agkistrodon bilineatus, Crotalus, Bitis parviocula and Botriechis schegeli. These uncommon envenomations occurred in workers (e.g. herpetologists) and may require specific antivenom supply. PPC plays a key role in the clinical management of the envenomed patient.

Acute poisonings in farmers and fishers in Italy: a poison control center based 5 years case series /observation

Davide Lonati [(1)] - Marta Crevani [(1)] - Sarah Vecchio [(1)] - Andrea Giampreti [(1)] - Valeria Margherita Petrolini [(1)] - Eleonora Buscaglia [(1)] - Francesca Chiara [(1)] - Giulia Scaravaggi [(1)] - Azzurra Schicchi [(1)] - Carlo Alessandro Locatelli [(1)]

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OBJECTIVES: To describe clinical aspects and medical management of human poisoning in rural and fishing occupational setting. METHODS: A five years (2010-2014) retrospective study concerning the Pavia Poison Centre (PPC) experience on poisoning in farmers and fishermen in Italy was performed.

RESULTS AND CONLUSIONS: Outdoors occupational setting may expose workers to potentially toxic agents. In PPC experience, farmers and ranchers are commonly exposed to pesticides and herbicides. Inappropriate use associated with incorrect use of protective equipment may predispose to toxic exposures (skin/ocular contact, inhalation); clinical findings may vary from irritating symptoms to severe systemic manifestations. Clinical management may require cutaneous decontamination, symptomatic therapy and antidotal treatment; severe intoxications may need hospitalization. Rural setting may also expose to the risk of viper bites, that may be characterized by severe local/systemic symptoms with an estimated mortality up to 1%. Envenomation by exotic snakes is rare and may regard particular risk categories (e.g. herpetologists). Among veterinarians, occupational exposure are mainly characterized by accidental self-injection of veterinary medicine (vaccines, antibiotics, anesthetics/sedatives). Symptomatic and specific management of injuries at risk for rabies disease has been reported for particular outdoors occupational setting (e.g. foresters). Pneumonia caused by diesel fuel accidental aspiration is possible among farmers and may require medical evaluation and therapy with corticosteroid, antibiotic and oxygen supplementation. In PPC experience fishermen may be exposed to the risk of venomous marine organisms stings (e.g. Trachinidae, sea-catfish). In these cases, hot water immersion and wound exploration are indicated in addition to antitetanus prophylaxis and antibiotics (when required). Besides playing a fundamental role in the diagnosis of intoxication, PPC provides also a specialized advice to evaluate correct indications for antidote administration and to supply antidote in adequate amount. In occupational setting, a correct preventive information program may be essential and continuous training of physicians and workers is required.

Modelling exposure to pesticide in Rural Areas

Matphyto: a French program for retrospective pesticide exposure assessment by using CEM

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OBJECTIVES:

Acute effects of pesticides are well known, but information on delayed effects such as cancers is lacking. Detailed knowledge of past occupational exposures to pesticides is required for epidemiologic studies or monitoring survey. Retrospective assessment of occupational pesticide exposure is therefore challenging.

Up to now, no occupational pesticide exposure database exists in France and the existing databases do not provide an accurate picture to retrospective exposure to pesticides. Matphyto program has been initiated to remedy this knowledge gap. This program consists in developing crop exposure matrices (CEM) to pesticides to reconstruct historical pesticide use patterns in France

METHODS:

The Matphyto program aims at developing CEM for each French main crop since the 60s. Matphyto covers the metropolitan crops. Recently the program has been extended to the French overseas departments: Carribean Sea and Indian Ocean.

For each crop, data of the pesticide uses are collected and compiled. Different periods and geographical areas are characterized. Three exposure indicators for each active substance and chemical family are defined for each period and each geographical area:

-Probability (proportion of farms using a product),
-Frequency (average number of annual applications),
-Intensity (average dose used for one application).

CEM are validated by a group of agricultural experts and are freely available on the Internet.

RESULTS:

First, Matphyto focuses on the main French Crops: straw cereals, potatoes, corn and wine-growing. In parallel, population data are crossing with the CEM of arsenical pesticides. This work allows identifying occupational pesticide exposure indicators such as exposure prevalence of agricultural workers by sex, age, occupational period, region, etc. Moreover, CEMs can be useful to the occupational medicine as well as to epidemiological studies to assess more precisely pesticides exposure. Furthermore, a new project is currently launched to examine the feasibility to use Geographic Information System (GIS) to match the CEM with crop location data.

CONCLUSIONS:

Matphyto is a national program that covers most of the crops in France. The data will be widely and freely available to support assessment of occupational exposure to pesticides. First CEMs and first results of matrices combined with population data are already available.

CIA: a new tool to assess retrospective occupational exposure to pesticides in France

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OBJECTIVES:

The link between some chronic diseases such as cancer and pesticides continues to be contentious. One of the main issue is that measuring pesticide exposure is an enormous challenge in epidemiologic studies that rely on recall and retrospective exposure assessment. Over 1000 pesticides have been produced and placed on the French market since 1960 with various biological actions. No database gathered of the use of pesticides over time. With this concern and in response to a strong demand from researchers and public health managers, a new tool "Compilation des Index Acta (CIA)" has been developed. It aims at listing all the active substances which are registered in France since 1961, for all crops and all uses.

METHODS:

In France, Acta, the head of the agricultural technical institutes network, edits an annual index of plant protection products. This index details all registered active substances used in agriculture. The accuracy of data has been continually improved since 1961. In order to ensure continuous monitoring of the registered use of pesticides over time, a very important work of interpretation, homogenization and data input has been made. The choices made for homogenization were approved by experts from technical institutes.

RESULTS:

CIA provides data on pesticides as:

- 1053 individual forms (one form for each substance) with the characteristics and the agricultural uses of the substance,
- An Access® database which allows advanced queries about the active substance,
- Graphs from the main retrievals of the CIA database.

CONCLUSIONS:

This free tool, first of its kind in France, is available on web (http://index-matphyto.univ-lyon1.fr). CIA makes it possible to retrace the registered use of pesticides in France since 1961. Advanced queries from CIA database are possible according to the pesticides uses on crops, the approval and removal dates of an active substance, the chemical families… All these results improve the knowledge of the professional exposures history in agricultural sector, a required element for occupational health monitoring. This tool is useful to improve the traceability of farmer exposure carried out by occupational health doctors and to improve historical exposure assessment in epidemiological studies.

Biological Monitoring for Pesticide Risk Assessment in Farmers and Rural Population with a Tiered Protocol

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OBJECTIVES:

The assessment of exposure and of exposure-related risk for pesticides is a burdensome and expensive task. Since farmers are often exposed to many active substances, several times per year, at different working and environmental conditions, and their families, including children pregnant and breastfeeding women, the elderly, share the same environment, biological monitoring is the most promising technique for this purpose. However, there is still a difficulty to use the actual results of biological monitoring to assess individual risk, mainly due to the lack of suitable exposure limits.

METHODS:

To overcome this knowledge gap, the ICRH is currently establishing provisional Equivalent Biological Exposure Limits (EBELs) for priority pesticides. This multi-tiered approach exploits the extensive, although scattered information available in the scientific literature, in the authorization documents available from regulatory bodies, and the analysis of results from field studies.

RESULTS:

The established theoretical and computational basis and examples of the employed approach will be presented. In particular, it is possible to discriminate occupational exposure from agricultural tasks, including re-entry into treated fields, repair of agricultural equipment, from that of everyday life, from drinking water and from food. As proof-of-principle, the proposal of provisional EBELs for some priority pesticides, and an application to different agricultural tasks performed by Italian wine growers will be demonstrated.

CONCLUSIONS:

The establishment of a robust protocol for the determination of EBELs will allow individual risk assessment for farmers, for their families and for the general population of rural areas with moderate effort and cost.

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From Field Studies to Scenario-Based Risk Assessment: an Online Pesticide Risk Assessment Platform

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Risk assessment for applicators, among other categories, is required by law before an active substance is put on the market, and this process is usually done using the German model or the EURO-POEM. Nevertheless, real-life use of Plant Protection Products may differ substancially from the scenarios covered by the pre-market risk assessment, as many field studies have revealed, but pesticide exposure and risk assessment remains one of the most burdensome, expensive and rarely done activity in rural areas. Many scientific exposure studies have been done up to date, but their outputs and results are rarely used after the work has been published in scientific journals. At the International Centre for Rural Health (ICRH), we have been developing methods, namely "Exposure and Risk Profiles", in order to use the pesticide exposure and risk measurements done by our institution for higher tier exposure and risk assessment without additional laboratory analysis.

Our studies are based on a standardized questionnaire developed at the ICRH specifically for this activity, as well as a collection protocol for personal and biological exposure monitoring. We standardized all our results to typical work-days' exposure, controlling for work characteristics and personal protective devices.

Based on a study of 37 work-days of mancozeb application, we have developed exposure and risk profiles for closed (with air filters) and open tractor application. For mancozeb as the active substance, median risk was 0.12% of AOEL saturation, 0.10% for closed, and 0.28% for open tractors. Considering all use scenarios, the risk never exceeded 50% of AOEL saturation for mancozeb, and extrapolating to other active substances showed a risk only for substances with a very low AOEL together with high dermal absorption and use rate, most of which have been taken off the market.

We propose a multi-level, multi-tier approach. The first tier approach would offer risk assessment done using the German model. The user would then request the exposure and risk estimate using our field data (higher tier), adjusted of course, for the active substance of the user's choice. As a final step, the user can receive an analysis of most exposed regions, as well as the preventive measures which could reduce the exposure the most, the multi-level analysis.

Education for Basic Occupational Health in Agriculture (2)

Education for Basic Occupational Health in Agriculture: a round table

Van der Laan G and Van Dijk F

Introduction:

In different parts of the world courses on occupational health and safety have been developed, sometimes in the format of distant learning or blended learning. A growing amount of educational materials is available on the Internet and likely is used by teachers and students. It is worthwhile to evaluate these experiences. As the goal of WHO and OHLearning (OHTA) is the development of basic occupational health courses on a global scale, the question arises if it is possible to connect ideas and exchange experiences.

In this round table a first inventory of activities in this field will be presented and the possibility of support and exchange of educational materials will be discussed. Structure:

- Description of the training courses (target groups, content, structure) with referral to more detailed information
- Evaluation?
- Experienced key factors for success and failure.
- Possibilities for exchange of educational materials

Maybe a start can be made of a network of actors in this field. Workers Health in Agriculture could benefit from such collaboration.

Session 1

- Short introduction (Gert van der Laan)
- Kelly Donham (USA), experiences with training courses; lessons learnt
- Susan Brumby (Australia), experiences with training courses; lessons learnt
- Claudio Colosio (Italy) experiences from the International Centre of Rural Health
- Margherita Guzzoni (Italian Association of Workplace Safety Trainers) "Growing safety for workers and consumers.[i] A model for training and education in agriculture".
- Zeynep Şimşek (Turkey) a training Program for community health care staff
- Peter Lundquist (Sweden) experiences with training courses; lessons learnt
-

Session 2

- Maarten Verberk (LDOH), Development of a training program
- Tanja Perez Pavlisko (WONCA) on training book Rural Health
- Jorge Costa David (EU Commission), European experiences
- Shengli Niu (ILO) about WIND1-approach

Discussion:

- Experienced key factors for success and failure
- Mutual exchange of educational materials and support
- Translation of local agricultural practices in a training program
- Feasibility of an educational network; organizational issues
- Text proposal for a paragraph on this subject in the Lodi Declaration

Noise, Vibration, Dust, Endotoxin, Microorganism

Risk from vibration and noise on agricultural tractors

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OBJECTIVES:
The aim of this study was to evaluate the risk for operators of agricultural tractors and to identify risk- limiting interventions.

METHODS:
Tri-axial vibration on the seat's cushion and base as well as noise close to ears of the operator were measured on three agricultural tractors of different levels of technological progress. These tractors were examined during plowing, harrowing and driving both on a farm road and a paved road, at different speeds and at different values of inflation pressure of the tires.

RESULTS:
During plowing and harrowing, the frequency weighted acceleration values measured on the seat's cushion (0.59 - 0.90 m/s^2) are such as to make exposure A(8) equal to the action value (0.5 m/s^2) after use for 2.5-5.7 hours/day. Concerning the tractor without the soundproof cabin, noise levels (92.2 - 93.5 dB(A)) are such as to make exposure (Lex,8h) equal to the action value (85 dB(A)) after use for 68-91 minutes/day. Regarding the two tractors equipped with a cabin, noise levels are lower than 79 dB(A).
During plowing, vibrations are higher than those measured when harrowing. On a farm road vibrations are much higher than those on a paved road. Generally, a decrease in the forward speed and a reduction in the pressure of the tires cause a decrease in vibration. Considering the horizontal axes, vibrations on the seat's cushion are higher than those on the seat's base; regarding the vertical axis, the seat can attenuate or amplify vibration.
The rankings of tractors in terms of vibrations are not always those expected.

CONCLUSIONS:
Vibration and noise on agricultural tractors can represent a risk for the operators. Noise must be limited with soundproof cabins. Sometimes the interventions to reduce vibrations are not easily identified.

Chemicals and agrochemicals in rural areas

Problematic of the pesticides use by the gardeners in Burkina Faso

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BACKGROUD: Pesticides are very useful in the field of gardening in the fight against pests, which exposes gardeners to the risks associated with their use.
OBJECTIVES: The aim of our work was to study the incurred risks by the gardeners in Ouagadougou, to bring them to adhere to the prevention strategies implemented for their health and safety.
METHODS: It was a descriptive exploratory and cross sectional study. The study population consisted of 101 vegetable growers coming from three districts. They were involved in a probabilistic way using a simple random sampling. The study was carried out from 25th February to 19th April 2013.
RESULTS: The majority of users were illiterate (66.3%). Their ages ranged between 21 and 69ans, with a median of 38 years.78.2% was formed on pesticides by the Ministry of Agriculture. All vegetable growers used pesticides for most pyrethroids (86%). More than 90% products apply spray and keep the stocks in the fields. Personal Protective Equipment (PPE) was not worn. The empty containers were either buried in the ground or thrown into the fields. Damage the respiratory tract, eyes, and headache were the dominant symptoms after pesticide application. Finally, when the drinking water came from wells, it was not well covered in the majority.

CONCLUSIONS: With the strong urbanization and the increase of the demand, the gardeners were taken to big use of pesticides most of the time without follow-up nor control, with all the possible risks for their health, those of the populations as well as for the environment.
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99 - Investigating the impacts of endocrine disrupting compounds on sperm health: A new potential effect biomarker

Investigating the impacts of endocrine disrupting compounds on sperm health: A new potential effect biomarker

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Objectives: To describe how sperm aneuploidy is being used to assess the reproductive health effects of environmental and pesticide exposure.

Background: The WHO estimates that approximately 48.5 million couples experienced infertility in 2010. Each year more than 2 million couples in the US who want to have children are infertile, and over 2 million conceptions are lost before the twentieth week of gestation. About 40% of cases of human infertility are due to male factors. Errors in chromosome segregation during meiosis result in structural aberrations and imbalances in chromosome number known as aneuploidy. There is emerging evidence that environmental chemicals can adversely affect spermatogenesis and the occurrence of chromosomal aberrations, possibly through mechanisms of endocrine hormone modulation. The most common aneuploidies in humans at birth involve an abnormal number of X or Y chromosomes and at least 50% of XXY trisomies originate from the father. European data from consecutive birth studies show that the incidence of Klinefelter syndrome (XXY) appears to be increasing, but no increases have been observed in the incidence of XXX or XYY trisomies.

Methods: We have conducted studies of dichlorodiphenyltrichloroethane (DDT), polychlorinated biphenyls (PCBs), organophosphates (OPs) and pyrethroid (PYR) pesticide exposures and sperm aneuploidy in men recruited from clinics and communities. DDT and PCBs were measured in serum; OPs and PYRs were measured in urine. Sperm aneuploidy was analyzed using fluorescence in situ hybridization (FISH) to evaluate chromosome X, Y and 18.

Results: Recent data will be presented from investigations of exposures to persistent (DDT and PCBs) and non-persistent (organophosphate and pyrethroid insecticides) chemicals and associations with sperm aneuploidy to demonstrate the relevance of this endpoint for evaluating the endocrine disrupting properties of chemicals frequently used in agriculture.

Conclusions: Sperm aneuploidy is emerging as an important effect biomarker for evaluating the endocrine disrupting impacts of persistent and non persistent pesticides and related chemicals.

Pesticides intoxication

Sarah Vecchio - Marta Crevani - Andrea Giampreti - Valeria Margherita Petrolini- Eleonora Buscaglia - Francesca Chiara - Giulia Scaravaggi - Azzurra Schicchi - Davide Lonati - Carlo Alessandro Locatelli

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OBJECTIVES: To describe clinical aspects and medical management of toxic professional acute exposures to pesticides and herbicides in farmers. METHODS: A five years (2010-2014) retrospective study concerning the Pavia Poison Centre (PPC) experience on toxic professional acute exposures to pesticides and herbicides was performed. Attempted suicides were excluded. RESULTS AND CONLUSIONS: Pesticides and herbicide are professional products largely used in farmers and gardeners. There are many different molecules belonging to these categories of products and the toxic ways of exposures are highly variable (cutaneous and ocular contact, inhalation, oral contact). The identification of the risks relating to the specific products and the modality of acute exposure may delineate a various range of clinical manifestations that varies from irritating symptoms (e.g. lacrimation, cough, cutaneous hyperemia) to severe cases of systemic functional (e.g. cholinergic syndrome) and lesional damages (e.g. pulmonary fibrosis). Main intoxication predisposing factors are the inappropriate use of pesticides, associated with the incorrect use of Personal Protective Equipment (PPE). All potentially toxic contacts need a prompt medical evaluation. Focusing on organophosphates or carbamates poisoning, the clinical management may require cutaneous decontamination, symptomatic therapy and antidotal treatment, coupled with specialized laboratory support. Severe intoxications may need also hospitalization in intensive care units. Besides playing a fundamental role in the diagnosis of intoxication, PPC provides also a specialized advice to evaluate correct indications for antidote administration (doses and duration to treatment) and to supply antidote in adequate amount (e.g. oxime in case of organophosphate poisoning). To reduce potential risk of intoxication, especially in occupational setting, a correct preventive information program may be essential. Currently, always new molecules and associations of them appear on the market. In this frame, continuous training of physicians (in particular toxicologists) and workers is required.

Industry Point of View on Endocrine Disruptors

E. Vassallo

OBJECTIVES: Discussion on State of Art of Endocrine Disruptors in Europe for Plant Protection Products's Authorization

METHODS: Suspected increased incidences of some types of carcinoma, adverse effects on reproduction, diabetes and obesity are correlated to hormonal disfunction by some scientists. This has raised public concerns about chemical substances that could interfere with the endocrine system.

Although it is very difficult to ascertain whether and to which extent the daily exposure to chemical substances could influence the outcome or the severity of these diseases, the regulatory Authorities have considered to implement elements of a "cut-off" criteria system for substances which could interfere with the endocrine system into regulation. In the EU regulation of PPPs (EC 1107/2009) and for biocidal products (EC 528/2012) it is written, that substances, which have endocrine disrupting properties, cannot be authorized.

RESULTS: Taking the "cut-off" criteria into account, substances are approved on the base of their intrinsic properties, not considering the risk for human and environmental health on the base of the real conditions of exposure.

At the moment, the EU Commission is working on the definition of criteria to be used for defining a chemical substance as an ED and has performed a public consultation,that represents the impact assessment of the new legislation, which is the first step of the legislative tier.

CONCLUSIONS:

ECPA indeed agrees that there is a need to adopt criteria that are able to identify substances, which are likely to pose a human or environmental risk and precisely for those substances that give concerns under the real exposure conditions.

The criteria should be in accordance with the definition of endocrine disruptors from World Health Organization, they should be scientifically valid, unambiguous and applicable.

When assessing the ED effects of a substance, one should also take into account the adversity, the specificity, the severity, reversibility and potency (weight-of-evidence) for the endocrine-related effects and if it is likely that under real condition of exposure, the substance will reach concentrations (threshold) able to elicit adverse effect, at the proposed use rates.

Pesticide immunotoxicity: from *in vivo* evidence to mechanistic understanding

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Pesticides differ from all other chemical substances in that they are deliberately spread in the environment. Since they are designed to interfere with certain living organisms, variable levels of toxicity inevitably characterize them. Since this toxicity might be not specific for target organisms, pesticide use may endanger living species, including humans. It has been hypothesized that altered immune function may be an indicator of increased potential for the development of immunologically based diseases such as cancer, hypersensitivity and autoimmunity. In industrialized countries pesticides, together with new and modified patterns of exposure to chemicals, have been implicated in the increasing prevalence of such diseases.

Even if experimental data as well as sporadic human studies indicate that some pesticides can affect the immune system, overall, existing epidemiological studies are inadequate to raise conclusions on the immunotoxic risk associated to pesticide exposure. Xenobiotics may initiate, facilitate or exacerbate pathological immune processes, resulting in immunotoxicity by induction of mutations in genes coding for immunoregulatory factors, modifying immune tolerance and activation pathways.

The purpose of this presentation is to update the evidence of pesticide immunotoxicity and their mechanisms of action.

The Effectiveness of an Educational Intervention to Improve Knowledge and Perceptions for Reducing Organophosphate (OP) Pesticides Exposure among Indonesian Farmworkers

Suratman Suratman - Kirstin Ross - Kateryna Babina - John Edwards

Health and Environment Group, School of the Environment, Faculty of Science and Engineering, Flinders University, Adelaide, Australia (1)

OBJECTIVES: To determine the effectiveness of an educational intervention to improve knowledge and perceptions for reducing organophosphate (OP) pesticides exposure among Indonesian farmworkers.

METHODS: This was a quasi-experimental pretest-posttest study. Ethics approvals were obtained from Southern Adelaide Clinical Human Research Ethics Committee (SACHREC) with approval number: 319.13 and from Commission on Health Research Ethics, Faculty of Public Health, Diponegoro University, Semarang, Indonesia with approval number: 183/EC/FKM/2013. Thirty farmworkers working on conventional farms at Dukuhlo Village in Brebes Regency, Central Java, Indonesia received short information using power point slides followed by discussion. Knowledge and perceptions were measured using a structured questionnaire at baseline (pre-intervention) and at 3 months after the intervention. The resulted scores were analysed using paired t test.

RESULTS: Mean [SD] of scores of knowledge about adverse effects of OP pesticides exposure before and after providing intervention respectively were 14.17 [2.44] and 18.30 [3.39] ($t = 6.33$; p value < 0.0001). Meanwhile, scores of knowledge about self-protection from OP pesticide exposure in the first and second measurement respectively were 13.87 [3.34] and 16.17 [2.77] ($t = 4.70$; p value < 0.0001).

Scores of individual perception aspects (perceived susceptibility, perceived severity, perceived benefit, perceived barrier, and cues to action) were:

	Perceived Susceptibility	Perceived Severity	Perceived Benefit	Perceived Barrier	Cues to Action
Pretest	18.53 [3.93]	9.77 [2.06]	7.63 [1.83]	11.30 [3.52]	15.70 [1.37]
Posttest	21.93 [2.61]	10.73 [2.13]	8.53 [1.07]	12.73 [3.25]	12.73 [3.25]
t	6.02	3.38	2.34	5.58	1.69
p value	< 0.0001	0.0021	0.0264	< 0.0001	0.1022

CONCLUSIONS: This study suggests that the provided educational intervention can improve knowledge and perceptions to reduce OP exposure among farmworkers. However, cues to action did not significantly improve.

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Prevention of occupational skin diseases in agriculture

Contact allergy to the European Baseline Series in agricultural workers, 2009-2012

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At their workplace, farmers and other agricultural workers are exposed to a wide variety of substances, such as plant and animal allergens, microorganism, and pesticides, which may provoke occupational skin diseases. Most commonly, this is contact dermatitis, both allergic and/or irritant, at the site of frequent skin contact with irritants and sensitizing agents. The incidence of contact dermatitis is usually linked with the poor use of optimal protection (hat, boots, mask, gloves, impermeable coat and goggles). Evidence on farmers' skin disease is scarce, probably due to agricultural workers being less inclined to consult or possibly the incidence of occupational skin disease is indeed low in this group of workers. From this background, we examined data from European agricultural workers who were patch tested for suspected allergic contact dermatitis.

Material & Methods

We used data from ESSCA, 2009-2012, restricted to persons age > 15 and < 68 with a valid ISCO-88 code 6000 – 6999 who have been tested with the European Baseline Series (EBS). Data management and analysis is performed using the R software (version 3.1.0, www.r-project.org) following pertinent guidelines.

RESULTS

Among 29798 patients patch tested the percentage of farmers and fishers was very low (550 cases, 1.8%) with different percentages in involved counties: higher for Slovenia (7.16%) and Finland (5.9%), lower for Italy (0.87%) and United Kingdom (0.93%). Considering the job title the largest group was gardeners, horticulturists and nursery growers with 107 females (19.4 %) and 86 (15.5%) males; followed by skilled agricultural and fishery workers with 44 females (8%) and 38 (6.9%) males. Allergic contact dermatitis was demonstrated in the 52.2% of the group, 36.7% had irritant contact dermatitis, 8.1% presented other diseases. The most common involved sites were hands (50.2%) followed by head (14%) and arms (8.6%). Patch test sensitization in farmers was compared to those of white collar workers finding an increased sensitization to carbamates (6.92% vs 2.53%) and a significant lower sensitization to methyisotiazolinone (1.12% vs 3.14%, $p<0.05$), respectively.

Discussion and conclusions

Farmers are exposed to many substances that could cause allergic or irritant dermatitis: mainly pesticides and vegetables, but this professional group is underrepresented in analyzed countries data base patch tests. This could be related to the fact that farmers are less compliant to undergo patch tests than other professional groups. Moreover standard patch test showed an increased risk to be sensitized only to carbamates that are used as pesticides as well as rubber accelerators; and a lower risk to be sensitized to methylisotiazolinone, a hapten used in cosmetics. It must be noted that standard patch test is not sufficient to evaluate occupational dermatitis in farmers since many haptens are missing, such us vegetables or pesticides. For that reason there is the need to improve the diagnosis testing occupational series, to better define contact dermatitis in this professional group.

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Ultraviolence: sun induced occupational skin cancer

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BACKGROUND:

Surprisingly, solar ultraviolet (UV) radiation exposure is a vastly neglected occupational hazard. Recent large-scale meta-analyses have demonstrated that outdoor workers are least at a 43% higher risk for basalioma, and an almost doubled risk for squamous cell carcinoma. This poses challenges not only for the affected ca. 20 million outdoor workers in Europe but also to employers, social insurances, and health systems. Agriculture is one of the most UV-exposed branches. At EU level, it is of high relevance for the current Strategic Framework 2014-2020 for Health and Safety at Work. As yet, in six European countries skin cancer by occupational solar exposure is a recognized occupational disease, yet markedly underreported.

CONCLUSIONS:

UV-dosimetry has shown up to 500% additional annual UV-radiation in construction workers compared to the average population; and, at the same time, has highlighted the necessity for improved prevention. This may be by pro-active workplace design and work place organization but also by suitable UV-protective clothing and regular use of sunscreens. Like in the prevention of contact eczema, lack of knowledge and inconvenience of UV-protection seem the dominant factors, explaining for negligence and for carelessness. Therefore, interdisciplinary workers' education is required. Also, screening schemes and preventive treatment has to be facilitated. The problem of occupational NMSC will be increasing with demographic change, higher life expectancy and longer working life. At the same time, specific work protection laws with set exposure limits have to include solar UV-radiation, not only, as presently on the EU level, UV-radiation from artificial sources. Currently, in Europe, the "healthy skin@work" campaign raises public awareness to the problem. Furthermore, a recent EU H2020 COST Action "Development and Implementation of European Standards on Prevention of Occupational Skin Diseases (StanDerm)" comprising experts from 29 countries will help to further enhance scientific knowledge for evidence based, targeted prevention to improve rural health, even in this respect.

Skin barrier protection

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Background
Skin is a highly specialized and efficient barrier preventing excessive loss of water from the body and penetration of exogenous substances and UV radiation into the body. Gradual damage of the skin barrier e.g. due to repetitive exposure to skin irritants in the work place might lead to development of irritant contact dermatitis. Next, a damaged skin barrier will facilitate ingress of contact allergens and microorganisms and increase UV absorption in outdoor workers. Skin protection aiming at reducing exposure and repair of the skin barrier is therefore essential for the prevention of occupational skin diseases (OCD) including UV-related skin cancer.

Methods
This presentation will summarize current research on efficacy of various products aiming at skin barrier protection and repair including sunscreen formulations.

Results
Various topical formulations have recently been designed to provide skin barrier protection or to accelerate skin barrier repair. Working mechanisms of used products are mainly based on delivery of specific lipids and hygroscopic substances, and agents that regulate pH of the skin or occlude the skin. There is some evidence to support that regular application of barrier repair and barrier protection products may be of benefit in the prevention of occupational contact dermatitis.

Discussion
Maintenance and repair of the skin barrier should represent a major component in the prevention programs in occupations associated with high risk to OCD. However, further efforts are needed to develop best practices for their use in various occupational settings and increase adherence to skin protection measures.

Occupational exposure of workers with GENESIS-UV: dosimetric results in Germany

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Ultraviolet radiation (UVR) is cancerogenic. Since most of the solar UVR is absorbed in the ozone layer of the atmosphere, only a fraction of UV-B and UV-A reach the surface of the earth. Nevertheless, this amount of UVR may damage the skin and cause skin cancer. The relationship between UVR and non-melanomar skin cancer has been prooven scientifically.

Up to now, there is only poor knowledge of the *de facto* irradiance, the "amount (dose)" of radiation, during different occupational activities. To obtain reliable data, measurements at a distinct time are not suitable, but rather long-term data acquisition with dosimeters are necessary, making measurements very challenging.

GENESIS-UV (GENeration and Extraction System for Individual expoSure) has been designed to conduct measurements of occupational exposure against UVR. In the current study, 300 workers per year throughout Germany are equipped from April to October. With a data rate of 1 per second, UV irradiance is measured, along with accelerometer and magnetometer data. Such a dataset enables us to document the individual movement of the dosemeter with respect to the sun, and also to connect our data to global irradiance data and weather data. Such a detailed picture of the UVR exposure has not been presented so far.

First data will be shown emerging from the measurements in Germany 2014 and 2015.

Migration and Health

Self-reported heat illness among migrant Hispanic farmworkers in North Carolina

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OBJECTIVES: Heat stress is a major occupational hazard faced by farmworkers. A heat index of above 90°F (32°C) during the growing season is common in the southern US. This analysis examines the heat stress experiences of 101 Hispanic migrant farmworkers in North Carolina.

METHODS: In 2013, an interviewer-administered questionnaire was conducted that asked migrant farmworkers about heat stress experiences over the previous 3 months (June, July, and August), including outside and inside work, and in housing. Symptoms of heat stress recorded included: sudden muscle cramps; nausea or vomiting; hot, dry skin; confusion; and dizziness. Questions were asked about any precautions taken to prevent heat stress. Personal characteristics and recent work conditions were measured. Heat illness was defined as having any heat stress symptom.

RESULTS: All participants were Mexican men over the age of 30. Only 9% had more than a high school education. Sixty-nine percent reported working outside (n = 68) and inside (n = 18) in extreme heat. A quarter of the sample reported spending time in extremely hot housing (n = 27). Of those who worked in extreme heat, 39 (55.7%) experienced heat illness. The vast majority reported working in tobacco in the following tasks: planting (21.8%), harvesting (66.3%), topping (23.8%), and barning or loading (64.4%). Working in harvesting and topping tobacco were associated with heat illness, as was working in wet shoes or clothing. Extremely hot housing was also associated with heat illness. Drinking more water and taking breaks in the shade were the two leading precautions taken, while changing hours and activities were the least reported precautions.

CONCLUSIONS: Over one-third of the workers experienced heat illness during the first 3 months of the agricultural season demonstrating that this population is at risk of occupational heat stress. Policies that empower farmworkers to guard themselves against heat stress must be considered. Model policies have been implemented and evaluated in California, but those have not been adopted in other regions of the US.

Employment policies related to immigrant workers in the dairy industry: A comparative policy analysis across 10 countries

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Objectives:

Recent publications identify two trends currently affecting the dairy industry in multiple countries around the world: first, the size of diary production is growing rapidly; secondly, increasingly the workers in this very labor intensive setting are emigrating from countries other than the worksite location. The policies impacting these workers, vary from country to country and set the stage for the following objectives:

1. Provide a perspective of the current trends in the dairy industry and associated immigration policies around the world

2. Utilizing a social justice policy framework compare 10 countries employing an immigrant labor force in the dairy industry on multiple constructs.

Methods:

The purpose of a policy analysis is to examine the consequences of laws and procedures, intended and unintended on a target population. Utilizing a social justice policy analysis framework (Jimenez, 2010; Reich, 2015) the impact of policies in diverse countries affecting the immigrant workforce are presented and compared. Key constructs utilized include:

1. Discussion of the intended and unintended effects of the immigration policies
2. Presentation of the various types of benefits offered by the policies?
3. Analysis of horizontal equity across countries

Results:

Policies analyzed among selected countries indicate substantial variation in wages, length of stay, employer responsibilities, country entrance procedures and additional benefits provided. A common baseline among countries accepting immigrant workforces should include a recognition of minimum wage, and basic human needs such as access to healthcare, housing, on-the-job training and safe working conditions (Schenker, 2015).

Conclusions:

The demand for agricultural labor including dairy will increase based on trends previously identified. The goal of horizontal equity among countries is dependent upon an immigrant labor force for their dairy production includes not only the need to improve immigration policies, but also recognition of the need for additional tangible benefits for the target population.

A Longitudinal Analysis of Mexican-Born Farmworkers' Depressive Symptoms across Two Growing Seasons in North Carolina

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OBJECTIVES: The objectives for this analysis are to document the trajectory of Mexican-born Latino farmworker depressive symptoms across two agricultural seasons, and evaluate the association between structural and situational stressors on farmworker depressive symptoms.

METHODS: Data for the longitudinal analysis are from seven sets of fixed-response interviews administered to Latino farmworkers during the 2012 and 2013 growing seasons in North Carolina, which is located in the southeastern US.[1] Each interview completed by the 235 farmworkers included the 10-item Center for Epidemiologic Studies Depression (CES-D) scale that measures depressive symptoms during the previous week, the potential value ranging from 0 to 30, higher numbers indicating greater depressive symptoms.[2-5] Structural stressors, those likely to remain consistent across growing seasons, initial age, education, English fluency, marital status, and visa status, were collected during the baseline interview. Data about situational stressors, those that are likely to vary over time, such as experiencing discrimination in the US and having difficulty finding someone to talk to about feelings, were collected during each of the seven interviews.[2,6,7] Time variable items were selected for inclusion based on multiple criteria: not highly correlated with structural stressors, potentially relevant to all participants, and expected to change substantially during the growing season. Time was treated as an ordinal value. Data were analyzed using a mixed effects model.

RESULTS: The mean depressive symptom scores ranged between 4.24 and 5.35 across the 7 time points. Changes in the mean depressive scores across growing two seasons were statistically significant. The CES-D scores decreased across the first growing season. During the second growing season, the CES-D values decreased from the initial 2013 value and then increased. Greater formal education was associated with lower CES-D values. Experiencing stress due to discrimination, and having difficulty speaking about feelings were associated with increased depressive symptoms.

CONCLUSIONS: Both situational and structural stressors are associated with depressive symptoms among Mexican-born Latino farmworkers. Depressive symptoms decrease during the growing season, and can increase near season's end. Mexican-born farmworkers face substantial structural and situational challenges that affect their well-being.

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Living conditions, work and health of Mexican migrant farm workers

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BACKGROUND:

According to the latest available data, in the country there are 2, 040, 414 agricultural workers, from which approximately 430,000 are migrant laborers, who sell their work in exchange of low salaries and precarious working conditions. They belong to the poorest and marginalized sector of agricultural workers

OBJECTIVE:

To describe the characteristics of living, work and health-disease conditions of Mexican migrant farm workers

METHODS:

In the first part it is described the characteristics of living, working, and health-disease conditions of agricultural migrant laborers in Sinaloa Mexico. For this part a bibliographic review was made. In the second part a brief report of a research with 463 migrant laborers of an agricultural company in the same state of the republic is explained.

RESULTS:

Hiring laborers to agricultural fields is done in two ways, when workers go directly to fields or through intermediaries called "camioneteros" (truckers) or working recruiters. This population comprises a significant proportion of women and children, who are incorporated to immigration processes and waged labor. A large part of the workers and their families live in housing provided by the agricultural companies. Both crowded conditions and building materials influence the possibility of acquiring infectious diseases. Most workers don´t have social security or medical service. The working methods are per day, per job, or by contract. The basic unit of work organization is the squad, which is made up of 30 or 35 workers, mostly migrants. In general, the laborers migrate in groups to the poles of agricultural development; in this case, 73% traveled with their families. 35% are illiterate. 56.1% of the studied population referred having from 1 to 3 symptoms related with pesticides, 18% between 4 and 6, 11% between 7 and 9, 8% between 10 and 12, and 6% 13 or more. 55% of women and 51% of children less than 14 years old had Anemia.

CONCLUSIONS:

It is essential the study and diffusion of health-disease, living, and working conditions of the agricultural migrant laborers to collaborate in the making of proposals that contribute to a better quality of life of these workers.

Migrant Workers in Swedish Agriculture – a Challenge and a Solution for Farmers and Growers

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OBJECTIVES:

Migrant workers in agriculture are a rather new but growing trend in Sweden, due to lack of local workers and economic benefits for employers. The project started with a review of the literature, followed by a web-based survey to agricultural employers. The survey was responded by almost 4000 employers, indicating that 20% of them used migrant workers during 2011. Results showed that migrant workers are common both for shorter and longer periods within animal production, horticulture, forestry as well as construction work. Most of the migrant workers come from the Eastern part of Europe, such as Poland, Lithuania and Romania, with the goal to earn a better income. The main focus of the project is the focus on communication issues; such as working instructions, health and safety issues and food hygiene.

METHODS:

Data was collected through interviews on 15 workplaces with the employers, native Swedish co-workers and the migrant workers in their own language or by an interpreter.

RESULTS / CONCLUSIONS:

The results shows a number of critical problems which has led to miss-understandings, increased health and safety risks as well as food hygiene incidents. Positive solutions and good ideas have also been detected. The results of the project has been presented at a work-shop with the stakeholders in order to make an action plan for further actions including research, international collaboration and education. A guide-book for employers is one of the practical results. We are now looking for international collaboration since we believe this is an area of research that would benefit very much of collaboration in projects within EU and with or without other partners.

Keynote lectures - 11th September 2015

Access to Health Care – Greatest Challenge for Rural and Remote Health

Ashok Vikhe Patil

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OBJECTIVES: To analyse how the access of Health Care in Rural Areas affect the health parameters in Rural Areas.

METHODS: The author has compared the different interventions carried out in 235 villages in India.

WHO World Health Assembly adopted the HEALTH FOR ALL in 1981 which defined that health is to be brought within reach of everyone in a given country. Health For All implies the removal of the obstacles of health – that is to say, the elimination of malnutrition, ignorance, contaminated drinking water and unhygienic housing – quite as much as it does the solution of purely medical problems such as lack of doctors, hospital beds, drugs and vaccines.

Health for All depends on continued progress in Medical Care and Public Health. The Health Services must be accessible to all through Primary Health Care, in which basic medical help is available in every village, backed up by referral services for more specialised care.

The author takes a Macroscopic view of the Health For All Goal in some countries and discusses the relationship between the Access and Health For All.

The author has been working areas of India and his successful experience with the multifaceted approach towards reduction of morbidity and mortality will be elaborated and shared. This approach could be used as a model for sustainable health and development in developing coutries.

A Swedish strategy for safety and health in agriculture – from zero vision of fatalities to certification of working conditions

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OBJECTIVES:

In Sweden there has been a number of initiatives in order to improve the working conditions and reach the goal - Zero fatalities in agriculture. The main intitiative was the five year national project "Safe Farmers Common Sense" (Säkert Bondförnuft), funded the European Comission (EU) during 2009-2013. Evaluations of the results are on it´s way, but the year 2013 was historic with zero (0) work-related fatalities in Swedish agriculture. Since then there has been fatalities again and the project was not given further funding. The project is now being evaluated in a number of studies including follow-up interviews and enquiries among farmers and extension personnel, injury statistics and interviews with injured farmers, farm workers and family members.

In order to break new grounds are we now initiating two new initiatives in order to integrate health and safety into the modern professional farming: Integrating health & safety into business management in agriculture and Establishing national standards for working conditions in agriculture

METHODS:

Standards for Working Conditions

Developing Swedish certification standards for work in agriculture. An interesting process will lead to a standard and possibilities to be certified as a work place with healthy and safe working conditions. The work is coordinated by Sigill Kvalitetssystem and involves a working group with representatives from the whole food-chain as well as health & safety experts.The first goal is to include companies with field grown crops and employs seasonal farm workers, mainly migrant workers.

Health & safety into business management in agriculture

The Swedish Centre for Agricultural Business Management at the Swedish University of Agricultural Sciences in Alnarp. The interesting approach is that the Centre will have a large integrated proportion of work science and work environment management in research, education as well as in extension. The goal is that health & safety should be a natural and obvious part of modern farm management.

CONCLUSIONS:

After a five year national project "Safe Farmers Common Sense" are we now taking further steps towards our goal – Zero fatalities in agriculture – by new initiatives in order to integrate health & safety in professional management and by implementing Swedish standards for working conditions in agriculture in order to improve the working conditions for migrant farm workers. Both initiatives will be evaluated.

GPs and Occupational Health: the How to Achieve the dual goal of access and quality in rural health care

Tanja Pekez-Pavlisko, EURIPA Interim President

WONCA Wokring Party on Rural Practice – Co-chair

European countries differ in their healthcare organization. Organization of agricultural occupational health differs similarly. On one hand it is very easy to find quality literature from areas such as Great Britain, Ireland or Scandinavian countries, on the other it is difficult to find such literature regarding Southeastern Europe. Most of the population working in agriculture live in areas of low population density where it is difficult to access certain segments of healthcare. While Western Europe has a large number of farms spread across large areas, in Southeastern Europe farms are mostly small in size. In light of these facts, a research on healthcare availability for population in rural areas should be conducted, as well as accessibility to occupational physicians for farm workers. It is safe to assume that availability of occupational physicians varies, and is particularly smaller in Southeastern Europe. Considering that general practitioners maintain close relations with the population of rural areas, it is necessary to consider introducing special education in occupational health for agricultural workers. At the same time it is important to conduct activities in increasing decision makers' consciousness on farmers' occupational health. Special attention should be given to heads of insurance companies which would adequately pay for general practitioner's work in the area of agricultural occupational health.

One of the good examples is the miniproject in Kutina where a systematic examination of owner of small farms (BMI, blood pressure, glucometry, spirometry and ECG) was performed on 20 farmers, as well as counselling on proper usage of pesticides and herbicides, injury prevention and sunlight radiation.

Impact of Globalisation on Rural Workers' Working Conditions and Occupational Health

Prof. Jorma Rantanen, MD, PhD

Globalisation has both beneficial and adverse effects on rural work, but its occupational health impact has called less attention. Here only a few key issues are mentioned and further analysed in the presentation.

- Employment impact: Rapid growth of non-farming jobs (associated with mass urbanization) and marginalization of family farmers and rural workers. On average, an impressive reduction of poverty (by 50% since the 1990s)

- Massive unemployment among the low-skill and poor rural workers. Growing gap between poorest and middle-income groups.

- Imbalanced competitiveness situation of family farming in the globalizing market

- Occupancy of food producing land for non-food agricultural production and changes in land ownership

- Growing risks, hazards and work load by climate change associated with natural disasters, drought and erosion of land by floods

- Occupational safety risks related to climate change such as heat stress, UV cancer, emergencies and new biohazards.

There are, however, some positive signals which could be further amplified:

- Growing attention by International Organizations to rural workers' situation
- ILO Domestic Work Convention and ILO informal sector programmes. ILO's and others' attention to safety and health of workers throughout the whole supply chain
- G20 Melbourne Declaration on better safety and health for all
- WHO Global Strategy on Occupational Health for All and the Global Action Plan on Workers' Health.
- Expansion of UN MDGs from 8 to 17, including elimination of poverty and hunger and combating climate change, land erosion and promoting sustainable development.

Poster Presentation

Health of the rural population

Work Organisation and Occupational Health and Safety in Australian and United Kingdom Horticulture

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OBJECTIVES:

This study describes how work organisation, particularly itinerant and temporary employment, is having detrimental effects on the occupational health and safety (OHS) of workers, many of whom are foreign-born temporaries, in two countries: Australia and the United Kingdom (UK).

METHODS:

Data are drawn from 67 semi-structured interviews with horticultural fieldworkers, employers, labour providers, and industry, union and government representatives. The temporary labour migration mechanisms affecting the horticultural workforces were compared and real or perceived impacts on worker vulnerability and OHS outcomes were examined. The research design allowed the reporting of perceived pesticide exposure and potential sources of exposure.

RESULTS:

The itinerant nature of the work appeared to contribute to hazardous forms of work disorganisation arising from constant changes to co-workers and experience from job-to-job, and networks of temporary employment obstructed the quality of information flow on pesticide use and preventative behaviours. The critical factor seemed to be that the work was temporary and itinerant; workers were less concerned about employment conditions attached to a specific employer and did not appear to consider long term health but rather immediate safety issues, and their dependency in subcontracting chains and the absence of effective union representation or ability to interact with local workers were factors. Workers' status as foreign-born exacerbated this vulnerability i.e. economic pressures to earn and in the case of backpackers the need to secure 88 days of harvesting work to get an extension visa. While language skills and education have been seen as making foreign workers more susceptible to exploitation, this study found no significant differences.

CONCLUSIONS:

This research focussed on work organisation rather than ethnicity and the findings tend to suggest that it is not just the vulnerability of foreign-workers, which exacerbated problems but is also a part of the way work is being organised. The precariousness arising from work organisation seemed to be the most fundamental problem.

Active search of occupational and work-related diseases using administrative databases: a pilot project on musculoskeletal disorders

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Objectives

Occupational and work-related musculoskeletal disorders are nowadays the most frequent reported diseases in Italy, with an increasing rate of 600% in 2007-2011 period, but their incidence is still underestimated.

The aim of this study, conducted as part of the strand already used by the OCCAM project (1), is to quantify the possible underestimation of these diagnosis by collecting and processing clinical and demographic data from the information available in administrative databases.

Methods

We collected the Hospital Discharge Reports (HDR) of the patients living in Lodi area, regarding the period 2008-2010 and sent from all over Italy to Lodi Local Health Unit (ASL). Among them we selected those with the following ICD 9 codes: 726.10 - disorders of bursae and tendons in shoulder region, unspecified; 726.19 - other specified disorders of bursae and tendons in shoulder region; 726.32 - lateral epicondylitis; 722.52 - degeneration of lumbar or lumbosacral intervertebral disc; 722.73 - intervertebral disc disorder with myelopathy, lumbar region; 354.0 - carpal tunnel syndrome; 354.1 - other lesion of median nerve; 354.2 - lesion of ulnar nerve.

Cross-checking data from HDR and data included in Italian Social Security Service (INPS) archive, useful to define the different employers' activities, we identified those cases of musculoskeletal pathologies most likely work-related (2).

Subsequently we reviewed all the clinical records of identified cases and, when necessary, we interviewed the patients. In some cases also the Occupational Physicians of the companies have been involved.

Those cases we recognized having an occupational etiology have been reported to the Authorities as provided for by Italian Legislation.

Results

Among the 350 initial workers with musculoskeletal disease likely to be associated with working conditions, 74 cases concluded the diagnostic process: in 16 cases the study individuated an under-reporting of occupational musculoskeletal disease.

Conclusions

All diagnosed cases of occupational disease, except two, had not been previously recognized. This result confirms that today musculoskeletal work-related diseases are underestimated and that analogous focused studies are required in order to detect them.

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Is rural a safe place to live and work?

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OBJECTIVES: to investigate possible contributing and risk factors causing an increase in the incidence of malignancies in a rural community in North-West Romania
To determine the most effective community based interventions targeting risk reduction in rural population

METHODS:The target population is formed of the 1200 adult active population registered with a GP surgery in a rural setting,situated 25 km from the nearest secondary care provider.
The majority of the adults in the village does agricultural work full time or part time.
We determined the incidence of cancer in the past ten years in the target population as well as geographical distribution of the cases in the area.
We analysed the existing environmental, occupational hazards in our area as well as the frequency of Gp visits/ person in the target population for curative and preventive reasons.

RESULTS: We found that exposure to different environmental hazards of the working age rural population is not addressed properly due to lack of information,negligence, inefficiency of prevention and health education programmes.The rural workers have reduced access to regular occupational health checks and their addressability to health services is also reduced.

CONCLUSIONS: Cancer incidence and mortality rates in rural population are increasing due to the effect of socio-economic deprivation,environmental hazards,lack of prevention and targeted health education programmes including occupational health services.
Educational activities addressing both patient's and primary health care provider's needs can play an important role in prevention and early diagnosis of cancer and other non-communicable diseases.

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A preliminary survey involving the elderly living alone in a mountainous area for the difficulty of shopping, their economic situations, diet, and nutritional intake

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OBJECTIVES: A preliminary survey involving a limited number of elderly people was conducted to examine the relationship of obtaining food with diet and nutritional intake.

METHODS: The subjects were 20 single females aged 65 years or older living in Mine City, Yamaguchi Pref. Between September and October 2012, a questionnaire survey was conducted to ask them about the means of obtaining food and their economic situations. A two-day survey based on diet recording was also conducted to calculate and assess their food and nutritional intake. The subjects were divided into groups according to the status of their nutritional intake, and statistical analyses were conducted to examine independence in daily life, obtaining food, and their relationships in association with their economic situations. The χ^2 test was adopted as a nominal scale, and Welch's t-test was used to assess quantitative data.

RESULTS: The energy intake was 1,802kcal/day and its percentage of the standard level provided in the dietary reference intakes (DRI) was 102.9%, which suggests that the energy intake was desirable in general. All subjects in the group of the elderly whose energy intake was sufficient (n=12) required no support in their daily lives (χ^2=5.29, p=0.070). Specifically, the energy intake in the group of elderly females without difficulty shopping (n=15) was favorable, whereas that in the group with difficulty shopping (n=5) was significantly lower ($p<0.05$). The energy intake in the financially secure group (n=11) was favorable, whereas that in the financial difficulty group (n=5) was significantly lower ($p<0.05$).

CONCLUSIONS: The subjects of the survey included the elderly who may have difficulty shopping in the near future. Since elderly people who are unable to go shopping often develop malnutrition - a symptom of geriatric syndrome, they may become bedridden or require nursing care, which is expected to influence their life expectancy.

Effects of oral exercise on oral function and oral health related quality of life of the elderly

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OBJECTIVES: The purpose of this study is to examine the effects of oral exercise on oral function and denture satisfaction for the elderly using dentures.

METHODS: The study was performed with targets of the elderly in 13 senior community centers in Cheongsong-gun, Gyeongsangbuk-do, Korea from September 2013 to April 2014 and the study subjects were divided into two groups such as an intervention group provided with 8 week oral exercise program and control group. Data on oral function, denture satisfaction, and oral health related quality of life (OHIP-14) were analyzed between 79 subjects from intervention group and 72 subjects from control group.

RESULTS: For oral function, salivary flow rate, mouth opening, pronunciation and salty taste were significantly increased in the intervention group ($p<0.01$). There were significant differences in changes in salivary flow rate, mouth opening, pronunciation and salty taste between two groups ($p<0.01$). For denture satisfaction, there were significant differences in changes in masticatory function satisfaction, fixing function satisfaction, general treatment satisfaction and denture satisfaction between two groups ($p<0.05$). There were also significant differences in amount of change in oral health related quality of life between two groups($p<0.05$).

CONCLUSIONS: In conclusion, oral exercise was effective on improving oral functions and denture satisfaction of the elderly using dentures. In the future, it will be necessary that an oral exercise program can be utilized to improve oral health of the elderly using dentures.

Self- and familial awareness of hepatitis status among hepatitis B and hepatitis C carriers in Korean rural areas

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OBJECTIVE: Hepatitis is the most important cause of hepatocellular carcinoma in Korea. This study aims to estimate the self- and familial awareness of hepatitis status among the hepatitis B and C carriers and their cohabitant family members in Korean rural areas.

METHODS: Total of 5,017 randomly selected residents in rural areas were participated on the seroepidemiologic and questionnaire survey. We found 326 hepatitis B surface antigen (HBsAg) carriers or hepatitis C antibody (HCVAb) carriers and their 306 cohabiting family members. Subjects were considered unaware of hepatitis status if they answered that they had no history of hepatitis or no familial members diagnosed with hepatitis. We also explored the factors associated with the self- and familial awareness of hepatitis status.

RESULTS: Among the 208 hepatitis B carriers and their family members, 48.1% and 20.7% were aware of their own or cohabitant's hepatitis status, respectively. Only 31.4% of HCV carriers and 9.1% of their cohabiting family members were aware of their own and cohabitant's hepatitis status. The group of younger age (<65 years), with higher education or income level, and salaried employee were more likely to aware their own hepatitis status. However, no demographic factors were related to awareness of familial hepatitis status. In a multivariate analysis that include various demographic factors and health-related factors, younger age (OR 1.76, 95% confidence interval 1.03-3.03) and higher education level (p-for trend 0.008) were significantly associated with the self-reported awareness of hepatitis status.

CONCLUSIONS: Self- and familial awareness of hepatitis status in Korean rural areas were lower than the awareness in urban area which previously reported. Differences according to demographic and socioeconomic factors within the subjects were also found.

Is it possible to eliminate MERS? – **From the experience of brucellosis control in South Korea**

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OBJECTIVES: MERS is maybe known as one of zoonoses from camel to human. In this study, we would discuss about the possibilities of the elimination of MERS through the experience of brucellosis control in South Korea.

METHODS: Through literature review, we considered the activities for control of brucellosis and MERS both human and animals in both countries. And also we reviewed the similarities from cultural aspects in two regions, to be easily infected by close contact with animals.

RESULTS: In South Korea, Korea Centers for Disease Prevention and Control (KCDC) performed the survey annually on targeted high risk group for brucellosis such as livestock farmers since 2005. By these surveys during 10 years, seroprevalence of brucellosis among high risk groups has been reduced to zero steadily. With these activities, in the animal sector, premarketing test and annual test were implemented for all cattle of older than 1 year since respectively 2004, 2007. Through these efforts, both bovine and human brucellosis has been decreased been decreased since 2006. Unfortunately now these control activities for camel are supposed not to be sufficient in Middle East region. In aspects of culture, both cow and camel are similarly very close to human, providing labor and food. For this reason, when these animals are infected, human is easily exposed to diseases, and both animals may not be easily culled. And also Korean usually enjoy eating raw beef (*Yukhoe*), and similarly Middle Eastern enjoy drinking raw camel milk.

CONCLUSIONS: The successful control of brucellosis in South Korea was achieved from cooperation by the veterinary as well as medical sector. For also control of MERS, more extensive activities in Middle East region must be implemented. Particularly, avoidance of eating unpasteurized dairy products, and culling of infected camels with surveillance and compensation policy will help to eliminate MERS.

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The Effect of Health Education Program on Dysipidemia of Male Workers

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Objectives: This study aimed to clarify the impact of health education and a consultation program on male workers with dyslipidemia.

Methods: This study was performed, from Aug. 2012 through Mar. 2013, for male workers in their 30-50s whose LDL levels were 160mg/dl or more for the last five years, four companies with 700 employees meters located at Gyeongsangbuk-do, Republic of Korea. Among workers who agreed to participate in the study, 35 participants were randomly allocated to the intervention group and control, respectively. Excluding 18 participants(8 in the intervention group and 10 in control) who dropped out during the study period, a total of 52 workers(27 in the intervention group and 25 in control) were selected for the final analysis.

Results: Values of the plasma lipid level showed a significant decrease in comparisons before and after the intervention and between the period after the intervention and the 5-month follow-up, values measured in the follow-up showed a significant increase compared to those obtained in the period after the intervention.
Repeated measure ANOVA revealed a significant difference in total cholesterol($p<0.05$) and low density cholesterol($p<0.01$) between the intervention group and control. Analyzing the interaction between the factors, there was also a significant difference in high density cholesterol and triglyceride.

Conclusions: Continuous and systematic health education and consultation in every 3-6 months are required. Moreover, it is necessary to develop human resources and services required to maintain and manage modified behaviors and clinical outcomes.

The Effects of School-based Fissure Sealant Program for Preventing Dental Decay in the Permanent Teeth of Schoolchildren in Rural and Urban Areas

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Objectives: The aim of this study was to evaluate the effects of fissure sealants on the occlusal fissures of permanent first molar for three years in schoolchildren.
Methods: In 2005-2008, 4,768 students from 34 elementary schools located in Gimcheon rural and city areas were targeted.
Results: As for the DMFT rate depending on whether placing the fissure sealants, the teeth with the fissure sealants showed 1.4% in 1 year follow-up, 2.7% in 2 year follow-up and 4.1% in 3 year follow-up. When it comes to the teeth without the fissure sealants, it was 34.0% in 1 year follow-up, 47.4% in 2 year follow-up and 56.5% in 3 year follow-up, which showed that DMFT rate of the teeth with the fissure sealants was very low.

According to the comparison results of DMFT rate depending on the tooth brushing frequency and whether placing the sealants, DMFT rate between 'with the sealants' and 'without the sealants' were 7.8% and 71.5% each in 3 years when it comes to students who brushing once a day, and DMFT rate between 'with the fissure sealants' and 'without the fissure sealants' were 4.0% and 57.3% each in 3 years as for the students who brushing twice a day, and DMFT rate between 'with fissure the sealants' and 'without the fissure sealants' were 3.8% and 41.0% each in 3 years as for the students who brushing three times a day.

Conclusions: These results indicated that the fissure sealants excelled at preventing the dental caries, but if the brushing was not properly carried out, the effects wore off enough to offsetting the effectiveness of the fissure sealants.

Trend in colorectal cancer incidence in Chungnam province, South Korea (2000-2011)

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OBJECTIVES:

Colorectal cancer is the third most common cancer in South Korea. We explored the time trend in colorectal cancer incidence in Chungnam province, a rural region in South Korea.

METHODS:

Using the database from the Chungnam Cancer Registry (CCR), age-standardized (to world standard population) rate for incidence (ASRW) was calculated. Average annual percent change (AAPC) was assessed as a trend indicator.

RESULTS:

Incidence of colorectal cancer showed increasing trend in both sexes. Over the years 2000-2011, ASRW was increased from 29.8 to 52.0 (AAPC, 5.5%) per 100,000 person-years among men and from 15.9 to 25.0 (AAPC, 4.2%) among women, respectively. The increasing trend was more rapid for colon cancer (AAPC, 7.3% in male, 5.3% in female) than rectal cancer (AAPC, 3.9% in male, 1.2% in female).

CONCLUSIONS:

As a result of the rapid increase in colorectal cancer incidence in the last decade, Chungnam province may be one of high risk areas in the world. Monitoring and intervention are required on the risk factors which may contribute to the trend.

Experience with radionuclide therapy for malignant tumors at a rural community hospital

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OBJECTIVES: Our hospital is located in a provincial city in Japan, where we provide external radiotherapy using a linear accelerator and radionuclide therapy using radioactive isotopes for malignant tumors. This study summarizes our experience with 3 types of radionuclide therapy, along with their problems and future directions for our department.

METHODS: Remnant ablation after resection of thyroid cancer using iodine-131 (I-131), pain-relieving treatment of solid carcinoma with bone metastasis using strontium-89 (Sr-89), and radioimmunotherapy for chemotherapy-refractory malignant lymphoma using yttrium-90 (Y-90) were performed. The radiation dose in the exit criteria was determined by the Japanese government.

RESULTS: Remnant ablation of thyroid cancer with I-131 was used in 16 cases (2 cases treated twice). Pain-relieving treatment with Sr-89 was used in 57 cases (7 cases treated more than once). Radioimmunotherapy using Y-90 was used in 36 cases. Effectiveness of I-131 radionuclide therapy in the remnant thyroid tissue was demonstrated by radionuclide image in 9 cases. Pain-relieving treatment in the numerical rating scale (NRS) evaluation yielded pain relief in 29 cases Therapeutic effects of radioimmunotherapy using yttrium-90 (Y-90) were CR (n=14), PR (n=10), SD (n=4), and PD (n=4).

CONCLUSIONS: Three types of radionuclide therapy for malignant tumor treatment were judged effective, but additional experience with more cases will be obtained for each therapy. In future, we will use a new method of radionuclide therapy, for example, for cases of pheochromocytoma and neuroblastoma.

Eliminating asbestos-related diseases in Albania

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OBJECTIVES:

To examine the problem of asbestos in Albania and to recommend a research plan of action.

The World Health Organization estimates that 107,000 global annual deaths are caused by mesothelioma, asbestos-related lung cancer and asbestosis. In 2005, occupational exposure to asbestos was estimated to cause 43,000 mesothelioma deaths and among those 7000 were attributed to Europe. With a population of approximately 3 million, Albania is a middle income country (MIC) with half of the population living outside urban areas. Like other MICs in Europe, Albania has been afflicted by an accumulation of asbestos contamination combined with weak regulatory controls. To the extent that systematic data are available, the amount of asbestos used in Albania between 1930-1990 is estimated to be 188,000 tons. This is likely an underestimate and more complete data are lacking. The most ubiquitous asbestos containing product in Albania is asbestos-cement, containing 10-25% asbestos. A factory producing asbestos-cement was built in the 1960s and operated until 1992. The material may be compressed into flat or undulated sheets to build roofs or walls, and can produce a range of other products such as pipes, drains, guttering, conduits, and tanks. Risk groups particularly vulnerable to asbestos health threats include workers exposed to asbestos during construction or operation, as well as local residents who may be exposed to the release of asbestos fibers.

METHODS:

This poster will describe a public health research project designed to ultimately phase out asbestos products from ciruculation in Albania through multidisciplinary and multi-level interventions. The objectives of the project are: 1. Raising awareness of asbestos hazards among the public and policy-makers; 2. Capacity building in the health professionals and labour inspectorate; 3. Legislation of a national program for eliminating asbestos-related diseases. A map that provides a territorial analysis showing areas where asbestos is still present in various forms will be presented to highlight to show where more cancer preventive interventions through information and screening are needed and to highlight locations where recovery and remediation should be targeted.

CONCLUSIONS:

Abestos in Albania is an environmental public heath and rural health problem needing public health research and policy attention.

Cancer risk in rural areas

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Hospital respiratori disease –Oteshevo R Makedonia

OBJECTIVES: The malignant diseases marks trend of pore at the overall population. At the rural areas(which falls my orchard region-Prespa) which are used preparations for plants protection in latest years, it is visibly increased the number of diseased.It remains the question – how to deal with risk factors (air polution, pesticides,smoking), in order to preserve health population.

METHODS: Of the medical Journal is taken data for 96 people which are called in review. All are in history in repetitive respiratory symptoms and their treatment. At all respondents were made battery investigations (spirometry,oximetry.ECG and RTG pulmonary).it was elaborately taken personal and famiy history.

RESULTS: Of investigated group– 53(50,96%) patients are in direct contact with hemical preparations , 43(49%) are passive consumers(indirect contact).All are smokers and are exposed at general air pollution. At 39 is confirmed with RTG at lungs and MS at lungs.17 are with recurrent broncho obstructive epizods.

Polymyalgia Rheumatica (PMR): Clinical, laboratory, and immunofluorescence findings in the elderly in Japan

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Background:

Polymyalgia rheumatica (PMR) is characterized by symptoms of muscle pain and stiffness, aching, and tenderness of the neck, shoulders, and pelvic girdle with fever, general fatigue, body weight loss, appetite loss, and sometimes anemia. It mainly affects individuals over the age of fifty years, and the etiology and pathogenesis have remained uncertain. We selected 13 patients with PMR, for whom we had performed detailed immunologic, histologic, and immunofluorescence studies.

Methods:

We retrospectively selected 13 patients with PMR. They fulfilled the following clinical and laboratory conditions: age older than 50 years; suffering from severe myalgia and stiffness of proximal muscles without muscular weakness or atrophy for at least one month; a markedly increased erythrocyte sedimentation rate (ESR≧50 mm/hr) and strongly positive C-reactive protein (CRP) level; normal serum creatine kinase (CK) concentration, and usually negative as to rheumatoid factor (RF) and antinuclear factor; and a dramatic response to low doses of steroids.

Results:

The patients ranged from 64- to 100-years-old, and were 9 men and 4 women. All patients had suffered from severe myalgia in at least two parts of the body including the neck, shoulders, and pelvic girdle. The myalgia had persisted for one to 4 months. The ESR and CRP values ranged between 50 and 148 mm/hr, and 4.68 and 32.43 mg/dL, respectively. An immunofluorescence study of muscle biopsy specimens revealed IgG, IgA, and fibrinogen deposits in the perifascicular area of the perimysium.

Conclusions:

The presence of fibrinogen and fibrinogen degradation products (FDP) in the perimysium is probably due to the enhanced vascular permeability resulting from inflammation of the intima. These findings suggest that immune complexes play a role in the pathogenesis of PMR.

Changes in elderly prostatic cancer patients: A single rural community hospital experience

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OBJECTIVES:
Over the last decade, remarkable advancements have been made in treating prostate cancer. However, in Japan, hormone therapy is the main treatment, especially in the elderly. In Europe and the United States, on the other hand, prostate cancer screening through prostate-specific antigen (PSA) screening is not recommended for men over 80 years of age. We analyzed our institution's data from the past 12 years, including patient history, treatment methods, and the prognosis of prostate cancer patients over the age of 80.
METHODS:
A total of 179 cases of prostate cancer in patients aged above 79 years, between 2002 and 2013, were retrospectively evaluated. Mean age was 83 years, and the eldest patient was 96. Four historical groups were compared: Group A: 2002–2004, 40 cases; Group B: 2005–2007, 48 cases; Group C: 2008–2010, 46 cases; Group D: 2011–2013, 45 cases.
RESULTS:
Patients were observed from 1 to 136 months. Fifty-two patients were observed for more than 60 months. Sixty-two (30%) patients changed treatment courses, including androgen turnover; interestingly, no cancer deaths occurred in these cases, with 22 patients receiving follow-up at 5 years or more. Although 14 (7.8%) cancer death cases existed on the whole (A:B:C:D = 4:4:6:0), these occurred in 2011 or later.
In our hospital, the frequency of prostatic carcinoma has been increasing each year. However, in patients aged 80 and over, the rate has not increased in over 10 years. Over 50 patients survived for 5 years or more by undergoing treatment. By treating prostate cancer in elderly patients, with the use of hormone therapy when appropriate, we can prevent fatalities from prostate cancer.
CONCLUSIONS:
Our results suggest that treating prostate cancer in elderly patients is indeed worthwhile. Further investigation and large-scale analysis in other Japanese hospitals is needed.

Regional Variation of Chronic Periodontal Care Services in South Korea

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Objectives: This study analyzed the 2010 raw data by the Health Insurance Review and Assessment Service. The purpose of this study is to identify variations of dental services for chronic periodontitis patients who are 35 years old or over, among different regions(province), dental care facilities, and their age groups.

Methods : The study analyzed total 278,319 claims made on a main diagnosis of chronic periodontitis, including 264,994 claims made by dental clinics, 8,084 by dental hospitals, 3,509 by general hospitals, and 1,732 by tertiary hospitals.

Results: 1. There was a significant difference in medical care benefit costs between the provinces($p<0.0001$). 2. The age groups showed clear difference in the patient co-payment, insurer's costs, and medical care benefit costs paid to dental clinics, dental hospitals, and dental clinic in general hospitals, respectively($p<0.0001$). 3. Considering the variations according to first or revisit consultation, the rate of prescription, dental examination, and surgical procedures on chronic periodontal patients by different dental facilities. The radiographic treatment rate for the new chronic periodontal patients at the tertiary hospitals was 2.6 times higher than the dental clinic's.

Conclusions: Further research for variation of dental services need for identify the determinant factors and to minimize the variation and to improve the dental service quality.

Environmental and occupational risk assessment and prevention

From safety to productivity: an ergonomic study on milking activities

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Introduction

Agriculture is a risky activity and all agricultural jobs may affect both the quality of life of agricultural workers as well as the companies' budget in term of occupational injuries and illnesses. Biomechanical risk seems to be nowadays the main factor affecting the burden of disease in the sector. In Italy, for example, the number of reports of musculoskeletal diseases has shown an increase, in period 2010-2013, of 62,26% (1). These data underline an urgent need of prevention. However, doing preventive interventions is not easy because of the high costs, the structural characteristics of agricultural enterprises, and the fact that very often employers claim that the introduction of preventive interventions brings about a reduction of productivity.

Objectives

This study focuses on a particular agricultural activity, which is milking, aims at verifying whether a proper management of milking parlours in terms of health of workers affects productivity.

Methods:

Thirteen dairy farms has been involved in the study. Productivity was assessed with the MVTA Software, addressed at scanning the pace of work. In each milking parlour studied, we evaluated whether the time spent between the beginning of the preparation of the udder and the attack of the milking unit (2) was in compliance with the recommendations of specific sector's guidelines (90 seconds). In addition, the number of workers engaged in the activity has been considered. The evaluation of biomechanical overload was performed on 20 milkers engaged in the same enterprises, through the application of the Strain Index method (3).

Results:

In a milking parlor managed by a single milker, the time spent per animal for the entire milking time was 887 seconds, and 777 in the parlours with more than one milker. When working alone, milkers spent 126 seconds between the beginning of the preparation of the breast and the attachment of the milking unit. The time spent for the same job in the parlours with more than one milkier was 83 seconds. The value of the Strain Index for those who worked alone resulted 17.34, and 12.52 for the others (reference value = 7).

Conclusion:

Our study shows that in the milking parlours managed by only one milker the cows stationed 14% time more than in the companies with more than one milker, with an increase in animal stress which, on its turn, impacts on milk's quality (4). Moreover, when only one milker was engaged, the milking time recommended by specific guidelines was not respected. Moreover, in these companies, the

biomechanical risk results 38,5% higher in comparison with the companies with two milkers. Our study suggests that preventive interventions do not affect productivity and promote the quality of the products in this specific sector.

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Industrialized milking parlors operations: analysis of worker's wrist postures.

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BACKGROUND:

Work-Related Musculoskeletal Disorders (WMSDs) are one of the most common work-related health problems affecting millions of European workers across many sectors at a cost of billions Euros (1). In particular in Italy there was an increase of 613,4% from 2007 to 2011 in the agriculture sector (2). MSDs in dairy farming are due to the repetitiveness of the operations, loads weight, awkward posture and muscular effort. Among upper limbs wrists represent one of the more susceptible (3). Since the difficulties in collecting quantitative data about awkward postures in the field is often difficult to address problems caused by these disorders and implement solution. Thus, the present study is part of a bigger study conducted by a research group of the University of Milan focusing on the definition of risk profiles of biomechanics overload of upper limb in cow milkers.

AIMS:

The present study aimed to

1. define the milking subtasks with higher risk to cause MSDs of the wrist due to awkward posture through the use of an ergonomic software (Captiv developed by INRS and TEA)
2. Compare the quantitative data (wrist angulation) collected with Captiv Software and Strain Index(SI) data.

METHODS:

Three workers from an herringbone and a rotary milking parlor were recruited. The dominant hand (2 right hand and a left hand) of the workers were equipped by a goniometer during the first hour of milking activity. Each subject was followed by a camera synchronized with Captiv Software. Twenty-two different tasks were individuate and the time spent in Very good, good, fair, bad, very bad postures – as defined by Strain Index Method – has been calculated by Captiv Software. SI score has been evaluate for each worker in the field.

RESULTS & CONCLUSIONS:

The results show that the milking operation were is higher of MSDs are stripping, wiping, and attaching phase. The Captiv results are matching with the results of the SI method for the risk assessment of awkward posture of the wrist in cow milkers.

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Matphyto program in France's overseas departments: crop exposure matrices for retrospective pesticides exposure assessment in the French West Indies and Reunion Island

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OBJECTIVES:

Many agrochemicals products have been used for many decades in agriculture. Recent data from multiple scientific studies showed a positive link between agricultural occupational exposure to pesticides and some chronic diseases. However, few epidemiological studies demonstrate a link between a specific chemical substance and a disease because the retrospective pesticides exposure assessment is complex. To counter this problem, the French Institute for Public Health Surveillance, has set up the Matphyto program which aims at developing crop exposure matrices (CEM) to pesticides. To cover the entire territory of France, we have developed recently CEM for the French West Indies and for Reunion Island.

METHODS:

CEM are databases. They list the use of pesticides for the different French crops, since the 60's. In France, there is no exhaustive database about the use of pesticides in agriculture. To develop CEM we (1) conduct a bibliographic search about the crops and the pesticides used on, (2) combine heterogeneous data collected in order to describe the use over time of pesticides on each crop, (3) characterize different periods and different geographical areas for the use of pesticides, (4) define three indicators of use for each pesticide, crop, period and area:

- Probability (proportion of farms using a pesticide),

- Frequency (average number of annual applications),

- Intensity (average dose to be used for one application).

RESULTS:

On the French overseas, Matphyto firstly focus on two tropical crops: banana in French West Indies and sugarcane in Reunion Island. Vegetable and fruit crops will be taken into account in a second step for each territory. Since 60's, 90 active substances have been used in banana and 60 in sugarcane. Major applications are fungicides in banana (9 in 2014) and herbicides in sugarcane (4 in 2014). Among the 45 chemical families listed, the most used have been: organochlorines, phenoxyacetic herbicides, chlorotriazines, conazole fungicides, paraffinic oil.

CONCLUSIONS:

These CEM are useful tool for epidemiologic studies (i.e. the Coset MSA Cohorte), monitoring survey and occupational medicine, particularly for past exposures. Data will be freely available on Internet. They provide various exposure indicators such as prevalence of occupational exposure to the different pesticides according crops, periods, and areas.

ATV mortality in the United States, 2011-2013

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OBJECTIVES:

The purpose of this study is to examine contributing factors of ATV fatalities through application of the Agent-Host-Environment epidemiological model. By analyzing the associations between contributing factors targeted intervention strategies may be identified.

METHODS:

US incident reports of ATV fatalities and injuries between 2011 and 2013 were obtained from the Consumer Product Safety Commission (CPSC). Each report was read and coded based on information available in the narrative incident report. Descriptive statistics were obtained for the coded variables and Chi-Square Automatic Interaction Detector (CHAID) analysis was performed to identify associations between predictor variables.

RESULTS:

A total of 1,230 incident reports were obtained and, after data cleansing, a total 1,193 fatality reports remained. While only 12% of cases occurred on farms, the calculated mortality rate in the farming population (.62 per 100,000 population/year) is over four times higher than the overall mortality rate in the United States (.13 per 100,000 population/year). Descriptive statistics showed low helmet use (11.85% of fatal cases) and high use of alcohol and drugs (84.2% of fatal cases).

CONCLUSIONS:

Baised upon the results of the CHAID for helmet use the variable most associated with helmet use is location type, with users on the farm, home or street less likely to wear helmets than other location types. Hypothesized reasons for this low rate of helmet use, especially in the loaction types of farm and home, are: preceptions of helmets being exclusively for recreational riders or that helmets are cumbersome and make performing occupational activities difficult, and the presence of legislation exemptions for argricultural users.

By modeling and categorizing risk it is possible to develop targeted solutions to the root cause of the hazard. Modification of user behavior is necessary to negatively trend the ATV injury rate and can be attempted using education, training, experience and legislation.

Pesticide exposure and health-risk profiles for re-entry activities in mountain vineyards

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Objective

Define an exposure and risk profile for occupational exposure to pesticides during re-entry activities in viticulture using an approach based on the analysis of data collected from crops treated with penconazole.

Material and Methods

Six workers were monitored while doing re-entry activities in a vineyard sprayed with the fungicide penconazole less than 48 hours earlier. Dermal dose was monitored by the application of passive dosimeters (pads) and by collecting the hand wash liquid (water and isopropyl-alcohol 20%). Concentrations of penconazole and of its metabolite PEN-OH were measured in urine samples collected during the 24 hours following the beginning of working activities. Risk assessment is reported as ratio of systemic dose and *Acceptable Operator Exposure Level* indicated in the authorization dossier of penconazole.

Results

Pads on the back were the most exposed, followed by those on lower limbs. Proportionally to the surface, the back has also received the greater amount of active substance, followed by the upper limbs. Hands determine 5,53% of total exposure, but their level of contamination is more than three times higher than that of the body when compared to the represented surface. No worker exceeded the maximum level of individual risk (median percentage of AOEL's saturation=1,10%). The absorbed dose and the AOEL's percentage of saturation were well correlated with the values of urinary excretion (considering penconazole and its metabolite PEN-OH); correlation values are respectively r=0,8217 and r=0,9230. This allows to estimate a level of excretion of the biological indicator of exposure corresponding to the assumption of AOEL's dose saturation (value called "*Equivalent Biological Exposure Level*").

Conclusions

This study provides risk assessment for re-entry activities and estimates, from data collected in real conditions of exposure, a provisional biological exposure limit useful to interpret data from biological monitoring of workers exposed to penconazole.

Characterization of exposure to vibrations in different agricultural tractors

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OBJECTIVES: The study aims at evaluating the levels of exposure to vibrations in three categories of tractors, representative of different wears and levels of technical obsolescence. Data have been collected with tractors in stationary conditions, in order to evaluate only the engine-generated vibrations.

METHODS: Three wheeled tractors has been considered for the study: one very old (built in 1988), provided with a mechanic suspension seat; one intermediate (2010), provided with a mechanic suspension seat; and one very new (2015),provided with a pneumatic suspension seat and with a front axle suspension. Tractors have been selected in order to represent typical brands, models and gear in Italian tractor. During measures, the same operator sat on the driver's seat; when the option was available, the stiffness of suspension seat was regulated on the base of operator's weight. Measures have been performed with a triaxial accelerometer, inserted in a semirigid rubber plate placed on the plane of the seat, considering different engine speeds.

RESULTS: We measured the highest levels of vibrations in all the axes in the old tractor, and the lowest in the most recent one. Vibration levels were generally under 0.05/0.06 m/s^2. In transversal axis and at lower speed, vibrations level was 0.2 m/s^2: this is the highest level we measured in stationary conditions.

CONCLUSIONS: In stationary tractors, the only source of vibrations is represented by the engine function. Our data suggest that the highest levels of vibrations are observed in the oldest tractors, very likely due to reduced balancing of the engine brought about by the prolonged use. The lowest levels of exposure have been measured in the most recent built vehicles. The results of our study confirm the recommendation of renovating the machineries of the agricultural enterprises, or at least doing periodical maintenance of the tractors. Moreover it is important to adjust the seat in base of the driver's weight in order to obtain a greater vibration attenuation.

Characterization of noise in three different types of wheeled tractors

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OBJECTIVES:

This study was conducted to measure the level of noise exposure in three wheeled tractors from different manufacturers: One very old (registered in 1988), one intermediate (registered in 2010) and one very recent (registered in 2015). The intermediate and the recent tractors were equipped with a soundproof cockpit roll-bar with soundproof protection (ROPS). The old tractor was equipped only with ROPS and a simple tin roof.

METHODS:

The measurements were carried out in stationary conditions, so as to consider only the noise produced by the engine to the various engine rpm. The characterization was performed in a field of 100 m, and the measurements were performed at a distance of 7,50 m, from the different sides of the tractor (left, front, right and rear) increasing from time to time the different revolutions of the engine. It 'was then measured the noise in the right ear and the left ear at a distance of 10 cm so as to evaluate possible changes in the noise at different engine revolutions.

RESULTS:

Noise levels measured on the old tractor were between 80.5 and 93.6 dB (A) (right ear) and between 79.5 and 93.1 dB (A) (left ear). The characterization on different sides of the tractor was as follows: right side 65.4 to 84 dB (A), front: 66.2 to 83.4, left and rear side: 66.1 to 82.1 dB (A) and 61.2 to 74.6 dB (A) respectively. In the intermediate age tractor, with soundproof cockpit, noise levels were between 66.6 and 81.4 dB (A) (right ear) and 67.6 and 81.9 dB (A) (left ear). Results of characterization were the following: right side 68 to 83.7 dB (A), front: 65.9 to 85.7 dB (A), left and rear side: 67.8 to 86.2 dB (A) and 61.2 to 76.9 dB (A) respectively. In the new tractor equipped with soundproof cockpit, the results were: 63.1 and 76 (right ear), 61.4, and 76.3 (left ear). The characterization on different sides of the tractor provided the following results: right side 66.2 to 82.2 dB (A), front: 65.3 to 82.9 dB (A), left and rear side: 65.4 to 85.3 dB (A) and 62.5 to 76.2 dB (A).

CONCLUSIONS:

In older tractor, sound levels were comprised between 93.6 to 93.1 dB (A); this means the possibility of approaching or exceeding the EU upper value of action of 85 dB (A), even for short exposure periods. In the intermediate age tractor, sound level resulted in the order of the lower action level, even in case of short durations of exposure. As for the new tractor, sound exposure did not reach the lower action level. Our data permit to create noise exposure profiles for different kind of tractors and suggest the need, in case of use of old machineries, of wearing hearing protection, or is adding a soundproof cockpit. Since the levels of noise depends also on the quality of maintenance of the machineries, periodical maintenance intervention are recommended.

Toolbox talks: development of a dairy training curriculum

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OBJECTIVES:

Dairy parlors have seen major industrialization over the past four decades to mirror increasing herd size. This trend correlates to a changing worker population, in the United States largely immigrants working 8-12 hour shifts characterized in the milking parlor by repetitive tasks often leading to musculoskeletal disorders. No longer small family businesses, large dairy operations often fail to implement comprehensive training appropriate for a predominately non-English speaking population. The objective of this study is to educate dairy workers comprehensively concerning all facets of dairy practice, management, health, and safety.

METHODS:

Pulling from the specialties such as animal husbandry, zoonotic epidemiology, and ergonomic risk assessment, a toolbox of ten training sessions is being developed to properly equip Latino dairy workers regarding the major components of dairy safety and health. These talks are designed as a ten week course of 15-minute weekly training sessions on various subjects, to be given at shift change to all dairy workers in three South Dakota dairies. Surveys are additionally administered to assess subject proficiency in weeks one, five, and ten, extending the training sessions of those weeks by 45 minutes.

RESULTS:

Survey results will be analyzed in order to demonstrate the efficacy of the training sessions regarding subject materials. The resulting training curriculum will be well suited to future dairy management implementation.

CONCLUSIONS:

For an effective "one health" approach to dairy health, all team members must be educated thoroughly concerning their own occupational well being as well as the intricacies of cow health and dairy production. Moreover, training must be adapted to the cultural background of employees for effective dissemination.

Assessment of noise annoyance on the workers in Olfin Factory, Mahshahr port, Iran

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Introduction

Noise pollution is one of the most prevalent environmental pollutions resulted from industries. The aim of present study was to assess the level of airborne noise sensitivity and annoyance on the worker in petro-chemistry factor, which is located in south of Mahshahr port, which is an economically active area in Iran. This large size industry (110.000 m2 area) produces Polymer materials. Main sources of noise pollution are from Turbans, compressor houses and furnaces. 98 workers are working in that factory.

Materials and Method:

Standard method ISO 9612 was used for noise monitoring. Sound level meter monitoring CEL 450 and Dosimetery CEL 320 Models (Made in England) and a standard questionnaire were used. 62 stations were selected by simple random samplingAnd 2828 samples were collected. Safe and unsafe zones were shown by using Arc GIS software version 10. 98 questionnaires were completed and collected by workers. SPSS software version 19 was used for statistical analyzing.

Results:

Maximum, minimum and mean of SPL were 99, 60 and 75 dB (A), respectively. In 494 out of 2828 sample points the level of noise was more than 85 dB (A). 17%, 63% and 20% of sampling points were in hazard, precaution and safe areas respectability. Around 51% of workers were highly/very highly annoyed of noise in their workplace. Loss of inner peace was the most prevalent non-hearing of noise on workers. There was a significance association between mean SPL and workers annoyance, age, sleeping disorders, fatigue, and ear tinnitus as measured by Chi square test.

Discussion and conclusion:

. This study showed that the level of noise and annoyance was high among workers. In some points the level of noise has reached to 90 dB (A). This showed the importance of noise control measures to conserve the health and safety of workers.

Key words:

Noise monitoring, annoyance, Petrochemical factory

Assessment of agricultural pesticide exposure by Pesticide Exposure Examination Survey among Korean agricultural workers

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OBJECTIVES:

Our study purpose were to evaluate pesticide exposure of occupational agricultural working category according to before and after pesticide spraying.

METHODS:

A total of 17 male farmers were recruited to participate in pesticide exposure examination survey (PEES). We were to assess urinary metabolites excretion concentration for 4 types of organophosphate (OP) and pyrethroids (PR), respectively (OP metabolites: dimethylphosphate, dimethylthiophosphate, diethylphosphate, and diethylthiophosphate; PR metabolites: cis and trans-2, 2-(dichlorovinyl)-2, 2- dimethylcyclopropane carboxylic acid, cis-2, 2-(dibromovinyl)-2, 2-dimethylcyclopropane carboxylic acid, and 3-phenoxybenzoic acid). Urine samples were collected four times a spot-urine (before pesticide spraying , the next morning after pesticide spraying, and the next morning after the farm work after 24 and 48 hours pesticide spraying). The urine metabolites were compared with each measurement.

RESULTS:

This survey is still in progress and the results will come out on August 2015.

CONCLUSIONS:

Even though this study sample size was small and including for only a few types of pesticide metabolite results, it will be expect to provide the clue related with agricultural pesticide exposure.

Health and safety policies in rural areas

People's Attitude Toward Eating Habits and Health in Japanese Rural Area - Analysis of Survey Results and Their Commitment to Agriculture -

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OBJECTIVES:

As part of the special study project of the Japanese Association of Rural Medicine (JARM), a questionnaire survey was conducted to probe into the attitude of rural people toward their eating habits and health.

METHODS:

Most of the people surveyed had received health checkups carried out by medical facilities affiliated with the JARM.

RESULTS:

Questionnaires were distributed to a total of 5,397 people (2,588 men; 2,809 women) living in and around provincial cities. Mean age was 53.4 for men and 53.8 for women. More than half of those questioned were farmers or had experienced in farming. Eighty percent of the total said they felt happy, and those who felt short of exercise also represented 80%, but with advancing age, the ratio decreased. Those over the age of 70 who said they had a habit of taking exercise made up as high as 60%. Many said they were satisfied with food in terms of quantity, but not a few people expressed uneasiness about food safety, dietary life and supply of food. Regarding favorite foodstuffs, many gave rice, vegetables and dairy products. There was a tendency for older people to eat meat less. It was found that, with increasing age, people took to eat dairy products, soybeans, vegetables, fruits and fish were ranked among the most popular foodstuffs. Respondents with a higher score on the attitude toward local production for local consumption and commitment to agriculture were interested in social participation, eating breakfast, securing food supply and purchasing foodstuffs at outlet stores run by local agricultural cooperatives.

CONCLUSIONS:

From these findings, it was suggested that many residents in and around provincial cities oriented themselves to healthy eating habits and lifestyle, and were very interested in social participation, local economy, agricultural production and consumption of local farm produce.

Legal, statutory and institutional framework of the management of pesticides in Benin: which impact on the users behaviors?

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BACKGROUND: If the legal and statutory measures enable to reduce the incidence of the effect of pesticides on human health and on the environment in the developed countries, it does not seem the same in african countries in general and in Benin in particular. Our countries still show high rates of harmful effects of these products on human health and on the environment.

OBJECTIVES: We aimed through this study to describe the legal and statutory framework of management of pesticides in Benin.

METHODS: After a review of literature of the legislative and statutory texts related to the management of pesticides, and through a cross sectional study, we questioned 422 farmers selected by random sampling. The data collected have been processed and analyzed using Epi-Info Version 3.5.1. The results of the quantitative variables are presented as mean ± SD and categorical variables such as percentage. Categorical variables are compared using chi-square tests with statistical significance taken at $p < 0.05$.

RESULTS: On the national level the legal and statutory framework comes through various texts of laws, their orders of application and many other measures intended for the achievement of the objectives that the country set regarding management of persistent pollutants. Concerning the varieties of pesticides used over the period of study, there are some which are unlisted in the WHO classification, nor in the list of authorized pesticides. Concerning the distribution network, it developed an unofficial circuit of supply from the smuggled networks from Nigeria and Ghana. Old stocks of obsolete pesticides are also found themselves with the producers. Contrary to what is recommended, they were only 5 % to have weekly been visited for the supervision. The majority of the investigated reused the empty packagings

CONCLUSION: The reasons of this situation can be looked for in the performance of the statutory devices, their applications and the follow-up of these.

Mid-career change of medical doctors in Japan - Specialists to Generalist-

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OBJECTIVES:
In Japan, most physicians providing primary care service have been trained and qualified as specialists before focusing on primary care at middle age. This mid-career change may be unique in the world because specialists tend to earn more and have greater prestige than primary care physicians. However, the Fee Schedule, that sets the fee and conditions of payment for virtually all services in Japan, prices services for primary care relatively higher than those of specialists. However, whether the physicians who decide to switch to primary care have acquired the skills needed in primary care has not yet been examined. We will conduct a survey of the physicians providing home-based care to elucidate the process on how they came to focus on primary care and whether they possess the skills required.

METHODS:
A list of the physicians who provide home-based care in clinics or in hospitals will be made based on the register of clinics and hospitals providing home-based care supporting services. The questionnaire consists of age and sex, their career before starting to provide primary care, basic skills as generalists and the process as to how they acquired these skills. The questions will be modified from the examination of the Japanese Family Medicine Society and the American Board of Family Practice, and their answers will be compared with those of their members. This questionnaire will be mailed to those listed. This study will be conducted in Nagano Prefecture. However, a pilot study will be conducted by interviewing representative samples in advance.

RESULTS:
We will present the results of the pilot study. We will focus on how the skills of those interviewed compares with those of the newly established qualification for family medicine specialists.

CONCLUSIONS:
To be presented at the meeting

The possibility of verbal autopsy to clarify the causes of death in the HIV positive patients and to improve the services in rural setting in Zambia

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OBJECTIVES:

Low-income countries in sub-Sahara Africa have high prevalence of HIV and most of their deaths happen in their home or close clinics. Consequently, the causes of their death were not clarified.
The cohort study was conducted to follow up HIV positive patients in Mumbwa district in Zambia to compare the patients who can attend district hospitals (DH) that can provide every day and rural health center (RHC) supported by mobile ART team once in two weeks. As a result, 352 patients were totally followed. Twenty nine cases were the death in RHC (29/177 cases) , and Seventeen cases died in DH (17/158) for 2 years. Verbal autopsy was planed to make clear main causes of "Death" cases in rural setting. Furthermore, we expected that grasping of causes of death cases could lead to improving of ART services.

METHODS:

The questionnaire for verbal autopsy was developed based on the 2012 WHO verbal autopsy instrument. The list of 49 death cases was prepared from the cohort. Verbal Autopsy to families or neighbors of each death case was conducted confidentially with the cooperation of community heath volunteers through visits or calls to them. The questionnaires were collected and analyzed to clarify the expected reasons of those death cases using the modified instrument.

RESULTS

Forty-three cases could be surveyed with verbal autopsy(43/49cases) .The major reasons of deaths were tuberculosis (14/49), chronic diarrhea(8/49) and HIV waisting (6/49cases).
9 cases of 14 TB suspected patients could not get the exams. Most of diarrhea suspected patients were prescribed with only antibiotics.

Conclusion

The verbal autopsy could clarify the main reasons of death cases of HIV patients with certain accuracy. Moreover, the findings from verbal autopsy could improve HIV clinical services in rural setting.

REFERENCES:

2012 WHO verbal autopsy instrument

Differences in the number of elderly individuals newly certified to require long-term care between basic checklist respondents and non-respondents

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Objects and Methods

Among approximately 8,000 elderly citizens of X City, changes in the number of individuals, newly certified to require long-term care, were observed from 2008 to March 2013. The aggregated totals of these individuals and associated factors were evaluated. The rates of care-needs certification were compared between two cohorts; specific health checkup examinees / basic checklist respondents and non-examinees / non-respondents.

Results and Conclusions

1. Support Required 1, Support Required 2, and Long-term Care Required (level 1) certified individuals accounted for approximately 80% of newly certified individuals aged 65–74 years. Newly certified individuals aged 75 years and over had similar results with 37.2% certified Support Required 1, 19.4% certified Support Required 2, and 22.9% certified Long-term Care Required (level 1).

2. Of the 7,820 specific health checkup examinees / basic checklist respondents, 1,280 were newly certified to require long-term care (16.4%), compared to 7,878 (26.9%) of the 29,234 non-examinees / non-respondents. Therefore the latter cohort had a significantly higher rate of individuals who were newly certified to require long-term care.

The status of safety and health in agriculture of South Korea

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Objectives: The purpose of this study is to look into the research and development programs for farmers' health and safety in South Korea. The development of agricultural technology in Korea has caused health and safety problems as well as reduced the needed labor force. For farmers have become exposed to various risks from many types of pesticides, farm machinery and agricultural facilities. Another aspect is rural communities became already aging society as the result of industrialization. These elderly farmers have been working a lot of time in poor working conditions. Farmers' long-term health problems are caused by agricultural activities, like keeping the awkward postures. According to a state-approved sample statistics by RDA, more than one day absence, the rate of work-related injuries for farmers is approximately 3%. And it is around 5% of the prevalence of work-related diseases of more than one day leave of working. In order to prevent occupational injury and disease of farmers, the Rural Development Administration has conducted research and development programs such as farm injury monitoring, exposure assessment on occupational hygienic risk factors, ergonomic tools, simulator training for agricultural tractors, farm work experience program, personal protection equipment and others.
Methods: Most recently, the Ministry of Agriculture has designated seven Agricultural Safety and Health Centers at the University Hospital to address the health problems of farmers and is trying to begin the farmers' social security system as insurance for occupational injury and disease.

A Health Promotion Strategy for Rapidly Aging Communities: The Activities of the Awata Health and Community Development Association's "Campaign for Improved Health"

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OBJECTIVES: The "Awata kenkō machizukuri kai" (the Awata Health and Community Development Association), established in Higashiyama Ward's Awata school district, continues to hold bi-annual events through the activities of its member organizations as part of a "Health Care Town" project to "revive community ties, and cultivate the potential for the community to promote feeling lifestyles."

METHODS: The study involved action research, and provided a detailed account of the activities implemented as part of the "Awata chiiki kenkō-ryoku appu daisakusen" (Awata Campaign for Improved Community Health).

RESULTS: The numbers of participants remain relatively unchanged since the first event, while in terms of the gender ratio, women have accounted for 60%–70% of participants on each occasion. In terms of the participants' age, the majority of participants were elderly persons in their 70s.

CONCLUSIONS: The member organizations of the Awata Health and Community Development Association (including the Residents' Association, the Women's Association, the Seniors' Club, the Kyoto University and Kyoto Prefectural University of Medicine, the Regional Comprehensive Support Center, and the Preventive Care Promotion Center) have understood their respective roles and functions through the repeated experience of conducting their activities, and have been holding discussions with the objective of securing new members. To support life in an aging urban neighborhood wherein the function of the community is declining, we believe that it will be beneficial to share functions among existing organizations and multiple other bodies, and to offer hands-on activities that can strengthen relationships among local residents. In the future, we plan to perform an evaluation of activities implemented as part of this project.

Improving the health of aged rural workers

Quality of Life of elderly people on a remote island : a comparison between urban and rural areas

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Objective

This study was conducted to clarify the difference among Quality of Life (QOL) of elderly people living in an urban area and in rural areas on a remote island.

Method

Surveys were conducted between September 2013 and February 2015. By means of a questionnaire, 51 elderly residents on A Island, 51 residents in B City, and 54 residents in rural Area C were interviewed. QOL was evaluated from one to five points using a partial modification of WHO/QOL26 in accordance with the actual situation in the above three areas. The results were analyzed by *t*-test.

Results

Respondents on A Island included 51 residents (18 males and 33 females), with ages ranging between 65 and 88 and averaging 77.2 years. Respondents in B City included 51 residents (17 males and 34 females), with ages ranging between 65 and 89 and averaging 76.0 years. Respondents in Area C included 54 residents (25 males and 29 females), with ages ranging between 65 and 85 and averaging 74.1 years. Of these residents, 96.1% on A Island, 74.5% in B City, and 90.7% in Area C were receiving medical treatment.

The residents on A Island scored between 2.15 and 4.04 on their QOL evaluation, the average being 3.20, the residents in B City scored between 2.31 and 4.69, the average being 3.76, and the residents in C Area scored between 2.77 and 4.81, with the average was 3.68.

The QOL scores were highest in B City, followed by Area C and B Island, with the scores for B City being significantly higher than for A Island.

Conclusion

The significantly higher QOL scores in B City than on A Island could be the result of geographical conditions, transportation facilities, secure living, fewer residents in need of medical care, and job satisfaction and competence.

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Participatory Action Oriented Training for Improvement of Health and Safety of Korean Farmers

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Objectives: This study was conducted to report the experiences of Participatory Action Oriented Training (PAOT) as a tools for empowerment training for promoting work-related health and safety of Korean farmers. We would like to introduce the application of participatory training method and report our experiences in a rural community in Korea.

Methods: The Korean version of PAOT manual and action checklist were developed on the basis of the original English version of the training materials, a questionnaire survey of agricultural health and safety professionals, and a brainstorming conference. Using these training materials, a one-day Korean PAOT program was developed. All participants had to have established their own health and safety improvement action plans as final task of workshop.

Results: From year of 2007 to 2014, we conducted 50 times PAOT workshop and 1,045 farmers participated. The mean self-estimated satisfaction score of the participants using questionnaire survey was greater than 90%. The average number of action plan proposed farmers were 20.7(male 10.8, female 9.9) in each workshop. They had proposed total 1,022 short term action plan and 452 long term plan. By follow up visit of famer's house, it had been proved that 64.7% of action plans were implemented into real.

Conclusions: A Korean PAOT program had been successfully developed and applied to Korean farmers. Although more studies are needed, it is expected that the PAOT will greatly contribute to the improvement of agricultural working conditions and health and safety through the use of farmers' self initiatives.

Gender Differences in the Occurrence of Nonfatal Agricultural Injuries among Farmers in Fukuoka, Japan

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BACKGROUND:

The lack of information regarding nonfatal agricultural injuries has been recognized as an obstacle for effective injury prevention. The aim of this study was to describe gender differences in the pattern of nonfatal agricultural injuries between the years 2008 and 2009.

METHODS:

Farmers' compensation claims are utilized to determine the distributions of mechanism (machinery, non-machinery, and traffic), type, source, cause, body part, place, work contents of injury and hospitalization. Agricultural injuries were identified using International Classification of External Causes of Injury (ICECI). The Statistical Analysis System (SAS) was used for all statistical analyses. Study variables were compared using the Mantel-Haentzel chi-square test.

RESULTS:

A total of 2,729 (1,921 males) farmers' compensation injury claims was analyzed. There were approximately 9 times as many nonfatal agricultural machinery related injuries for males compared to females (536 and 58, respectively). The most common machinery injuries were cut with a rotary blade (31%) for males and struck by machine (24%) for females in 65-89 years of age group. The males-females ratio of non-machinery injuries averaged 2:1 (1,293 and 676, respectively). For both males and females in 65-89 years of age group, the main source of non-machinery injuries was due to the slope (18% and 22%, respectively), the main type was falling/slipping down (29% and 45%, respectively), the leading cause was fracture (28%, 45%, respectively), and the main work content was harvesting (51% and 38%, respectively). Female farmers had a greater risk of prolonged hospitalization (more than 30 days) compared to males ($p<0.01$).

CONCLUSIONS:

Gender is an important factor to consider in the interpretation of nonfatal agricultural injuries. A greater number of males were injured, when the occurrence of injury was categorized with machinery and non-machinery. Further research will be needed to understand the role of differential job-tasks within agriculture in explaining the risk difference.

Development and Application of Participatory Mapping for Healthy Agricultural Village

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OBJECTIVES: We developed participatory mapping as a tool for empowerment training for promoting farmer's health and safety. We would like to introduce participatory mapping method and report our experiences of it's application process in Korea rural community.

METHODS: One day course participatory mapping workshop was performed among volunteer farmer who belong to 'safe farm zone' rural village. The schedule of workshop was started with orientation session followed by village rounding, good example presentation, drawing healthy village map, group map presentation. During the workshop, participants were requested to express their ideas and experiences about healthy and safe residential, working environment on their map.

RESULTS: Total 206 farmers (100 male, 106 female) were participated in participatory mapping. In each workshop, 34.3 farmers participated, and their mean age was 59year. In six workshop, participants proposed total 137 action plans. The action plans were improvement of co-working condition, building a facilities for relaxation, traffic safety facilities, residential environment improvement.

CONCLUSIONS: We can successfully developed and applicated participatory mapping as a tools for empowerment among Korean farmers. They expressed their ideas and thoughts about healthy and safer village as a action plan on the map. Some of action plan were carried out immediately after workshop.

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Factors Affecting Four-year Score Change of Frailty, Depression, Cognitive Function and QOL in Rural Elderly: A Retrospective Study

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Objectives: This is a study of retrospective cohort performed targeting 296 elderly people who were 65 or older as of 2009.

Methods: It is designed to compare changes in scores in frailty, depression, cognitive function, and quality of life that occurred for four years between 2009 and 2013 and analyze related factors.

Results: The scores in frailty, depression, cognitive function, and quality of life for the four years all registered significant difference. A correlation analysis shows that the changes in frailty score, depression score, and cognitive function score were significantly correlated with the change in quality of life score. As of 2009, the subjects were divided into those who were 74 or younger and those who were 75 or older, and a comparison of changes in their scores for frailty, depression, and cognitive function showed differentiation with the two age groups.
As for factors affecting cognitive function score, age (80 or older), diabetes, deterioration in frailty score, and deterioration in depression score were significant, while as for factors affecting quality of life score, drinking experience and deterioration in frailty score were statistically significant.

Conclusions: In order to promote health level and quality of life, future establishment of policy for elderly health and welfare would have to be customized to age, mental health, and physical health condition, and various mediation programs including elderly health project and mental health project will have to developed and provided.

Alteplase (rt-PA) therapy in old Japanese patients with acute ischemic stroke

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OBJECTIVES:

Propriety of rt-PA administration for old patients with acute ischemic stroke is still controversy. In Japan we have been required more careful judgment when we use rt-PA in over 80 years old patients. We in this study show the outcome of the rt-PA therapy in old patients in our hospital.

MATERIALS and METHODS:

Sixty-nine patients being administered rt-PA therapy in between January 2010 and December 2014 were enrolled in this study. Their age, NIH stroke scale (NIHSS) at the hospital visit, causes of infarction, time to hospital arrival (AT), time to start of rt-PA infusion (IT) and modified Rankin Scale (mRS) at the time of outcome were reviewed retrospectively in their medical records.

RESULTS:

Twenty-six out of 69 patients were 80 or over 80 years-old. Twenty-three out of the 26 patients were cardiac embolism, and the mean of NIHSS of the 26 patients were 18.5. Mean of AT and IT in the 26 patients were 67.3 and 160.7 minute. In the outcome of the 26 patients, we noted good recovery (mRS: 0~2) in only one, bedridden state (mRS: 5) in seven, and death (mRS: 6) in five patients. In the dead patients we could not find any symptomatic bleeding events due to side effect of rt-PA therapy.

DISCUSSION and CONCLUSIONS:

The condition at hospital visit was more severe in old patients, and this might be related to the worse outcome in this study. However, since we could not find symptomatic bleeding events, rt-PA therapy was thought to be safe. Administration of rt-PA for old patients with acute ischemic stroke is safe, but the effectiveness is lower in this study.

Muscle skeletal risk

Ergonomic analysis of work-related hazards in older farmers: a comparison between Sweden and Italy

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OBJECTIVES:

The progressive aging of the workforce affects also the agricultural industry, with farmers often working well beyond their expected retirement age (1-3). The aging process is related to many physical and cognitive changes which can affect the interaction with the work environment and can give rise to new hazards and risks for older farmers (4,5). Agricultural machinery, in particular tractors, are a major source of discomfort and accidents (2,6,7). These issues can be properly investigated by adopting an ergonomic approach, which focuses on the *interaction* between humans and the other elements of a system. Based on these considerations, the present study aims at performing an ergonomic analysis of work-related hazards in two sample of older farmers in Sweden and Italy, two peculiar countries in terms of agricultural practices and accidents involving older farmers.

METHODS:

10 male farmers aged 65 and over in both Sweden and Italy will be involved in the study. A semi-structured interview will be administered to investigate: 1) Motivation and satisfaction toward farm work; 2) Perceived physical and cognitive workload, 3) Safety practices and previous accidents.
The interaction with the agricultural machinery will be assessed through: 1) The simulation of some working tasks involving the tractor, 2) A brief questionnaire about the comfort of the tractor cab.
Anthropometric parameters will be considered too, to evaluate the effects of human physical variability on the human-machinery interaction.

RESULTS:

Data collection started in May 2015 in Sweden. Later on a matched group of participants will be involved in Italy.

CONCLUSIONS:

The results of the study will highlight similarities and differences in work-related hazards between Swedish and Italian older farmers. Based on this, some considerations will be done about the prevention campaigns, training interventions and design solutions that it's possible to develop to improve health and safety of older farmers in the two countries.

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Prevalence of Osteoporosis and related Factors using Quantitative Ultrasound among Korean Women Farm Workers

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Objectives : The aim of this study was to investigate prevalence of osteoporosis and its related factors in Korean women farm workers.

Methods : The present study is a cross-sectional study. The study population consisted of 94 Korean women farm workers aged 38 years and older with BMD measurements using quantitative ultrasound at calcaneus. Prevalence of osteoporosis and its related risk factors were analyzed.

Results : Prevalence of osteoporosis in Korean women farm workers (range of age, 38–83 year-old; average age, 61.3 year-old) was 40.4% at calcaneus. Risk of osteoporosis was significantly increased with age; 60-69 year-old (OR, 18.50; 95% CI, 3.55-96.34) and ≥70 year-old (OR, 57.81; 95% CI, 11.32-295.20). After adjusting for age, risk of osteoporosis was significantly associated with annual household income below 20,000,000 Won (OR, 9.86; 95% CI, 1.03-94.34) and overweight (BMI, 23.0-24.9 kg/m^2) (OR, 0.18; 95% CI, 0.05-0.72).

Conclusion : Prevalence of osteoporosis in Korean women farm workers was high and risk of osteoporosis was significantly associated with age, household income and BMI.

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Risk Factors Associated with Lumbar and Femoral Bone Fractures in postmenopausal Japanese Women

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OBJECTIVES: The purpose of this study was to analyze risk factors affecting fractures of the femoral neck and lumbar spine in postmenopausal women.

METHODS: The subjects were consisted of three groups (A: with fracture in femoral neck, B: with fracture in lumbar spine, and C: age-matched control without fracture) The numbers of each groups were 150, 112, and 101 respectively, and average ages were 74.8 ± 0.7 , 73.1± 0.7 , and 74.0 ± 0.6 respectively.

Bone mineral densities (BMDs) of lumbar spines (L2-L4) and femoral necks were measured by the DXA. Several factors those are thought to be affecting bone fractures such as ages, anthropometric factors, menses-related factors, alcohol drinking, tobacco smoking, past history of bone fracture, biochemical test values, and the presence or absence of complications and anamnesis were investigated. Comparing the differences of average values or prevalence values among three groups, effects of these factors on bone fractures were examined.

RESULTS: Past history of bone fractures were significantly prevalent in A and B groups. Tobacco smoking rate was higher in group B, and alcohol drinking rate was higher in group A. Femoral BMD was lower in group A, and Lumbar BMDs were lower in group A and B. Serum albumin levels were lower and blood glucose levels were higher in group A and B. Prevalence rate of diabetes mellitus was higher in group A, and prevalence rates of brain diseases were higher in group A and B. Blood pressure levels were higher in group A and B.

CONCLUSIONS: Past history of bone fractures, habit of tobacco smoking, alcohol drinking, low BMDs, malnutrition, complication of diabetes mellitus and brain diseases, and hypertension are risk factors of bone fractures in these postmenopausal women.

Internal fixation for displaced femoral neck fracture associated with poorly controlled diabetes mellitus

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OBJECTIVES:

Hemiarthroplasty has been recommended for displaced femoral neck fracture. Surgical site infection is a serious postoperative complication following hemiarthroplasty. In patients with diabetes mellitus (DM), the infection rate is high. We report cases of internal fixation for displaced femoral neck fractures associated with poorly controlled DM.

METHODS:

We identified fifteen patients with displaced femoral neck fracture with poorly controlled DM. The implant used were the Dual SC screw system (DSCS®) (Kisco) ,6 hips and the Hansson pin system (Stryker) , 9 hips.

We investigated HbA1C(NGSP)(%) level, existence of union at fracture site, interval between the initial operation, and HbA1C(NGSP)(%) level at salvage operation.

RESULTS:

Average HbA1C was 8.5% (range: 7.1-10.5) at the time of injury. We got fracture site union in seven cases. We need salvage operation in six cases. Interval between the initial operation was six months in average. HbA1C level at salvage operation improved to 7.1% in average.

CONCLUSIONS:

We performed internal fixation for displaced femoral neck fracture associated with poorly controlled DM. Even when the fracture did not unite, we had sufficient time to control the patient's DM. In cases of poorly controlled DM, internal fixation is one of the options for displaced femoral neck fracture.

Occupational risks assessment and prevention

Fine dust aerosols toxicokinetics in organism

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Objective is to study fine dust aerosols toxicokinetics in organism.

Methods. The polymetallic dust consists of free crystalline silica (53.7%), copper (8%), arsenic (0.04%), antimony (0.003%) and titanium (3%). It receives approval of Local Ethics Committee to conduct the experiment on white male rats by dynamic inhalation with polymetallic dust with 10 mg/m^3 concentration during 1, 3, 40, 90 and 180 days. Experimental terms correspond to 40 days, 4 months, 5, 10 and 20 years of working in dusty conditions.

Results. The highest silica deposition in rats' lungs (62%) occurred in the early experimental stages with reduction to 40 days (22%) at the continuing elimination ability via respiratory system (45%). It indicates the possibility of dust aerosols penetration while keeping mucociliary transport and phagocytosis. The reduction of elimination ability via respiratory system from 90 days (34%) indicates the worsening of mucociliary transport, phagocytosis activity and penetration activation into interstitial lung tissue.

At 1 day in the circulating rats' blood 29% of silica entering the body was revealed with clear reducing in further terms. It demonstrates the dust aerosols penetration into pulmonary interstitial tissue and their entry into bloodstream. These aerosols spread to internal organs and accumulate there decreasing silica amount in circulation blood.

By 40 days the silica deposition has increased in rat liver reducing its content in other gastrointestinal organs (85%) in absence of the sharp increasing their elimination with feces. It indicates the insolvency of detoxifying liver function.

Aerosols fall into the kidney tissue with the blood. By 40 days renal elimination function and intensive reabsorption have decreased reducing silica elimination with urine.

Conclusion. From the lung tissue by penetration fine dust aerosols reach the blood and spread the internal organs, and their elimination from organism is not only via inhalation but also via kidneys and gastrointestinal tract.

Risk factors and children injuries while performing agricultural work in the Požega-Slavonia County, Croatia

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OBJECTIVES:
The aim of this study was to determine current health and safety conditions of children who live and work in farm households in Požega-Slavonia County and to detect hazards that occur while performing agricultural work, in order to introduce specific health and safety measures that could help in health protection, as well as in eliminating and reducing injuries.

METHODS:
The study was conducted from September 2011 until May 2012. Data on agricultural activities performed by children, most common injuries and use of protective equipment were collected through a questionnaire.

RESULTS:
The results show that 52.1% of 188 children performed various agricultural activities on daily basis. While performing agricultural work, 30.6% of respondents suffered injuries characterized as minor and severe. The greatest number of injuries was caused by mechanical force while working with agricultural machinery, various hand tools and during work with animals.

CONCLUSIONS:
In conclusion, safety measures and regulations do not apply to children who are members of agricultural households. The existing legislative cannot regulate this problem because children are not officially employed. The presented data on these children's health condition point to the need of expanding the study to the health status of children in rural areas of Croatia, the impact of agricultural work on the occurrence of injuries and illness, as well as assessment and adoption of safety and health measures in order to ensure safer working environment and protection of their health.

Rural-urban differences impact the number of unintentional injuries in elderly Korean adults

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OBJECTIVES: The objective of this study was to evaluate the impact of rural-urban differences on the prevalence of unintentional injuries in elderly Korean adults. Futhermore, we evaluated the impact of sex and types of injury on the rural-urban differences in the number of unintentional injuries.

METHODS: This study included 49,890 subjects (20,304 males and 29,586 females) aged 65 years or older from the 2009 Community Health Survey (CHS). Unintentional injuries were defined as any injuries that were not deliberately caused by another person and required medical attention during the past 12 months. We performed survey logistic regression to determine the association between residential area and unintentional injuries, after adjusting for age and socioeconomic status.

RESULTS: The age adjusted prevalence of unintentional injuries were higher in rural (47.0 per 1000) than in urban (51.9 per 1000). When we stratified by sex, rural residence was associated with an increased risk of unintentional injuries in men (OR = 1.24, 95% CI = 1.05 – 1.47) but not in women (OR = 1.03, 95% CI = 0.90 – 1.18). In the subtype-specific analysis, rural residence was associated with an increased risk of traffic injuries (OR = 1.83, 95% CI = 1.33 – 2.51) and collisions (OR = 1.73, 95% CI = 1.13 – 2.63) in men but not in women while rural residence was associated wit and increased risk of animal bites (OR = 3.77, 95% CI 1.48 – 9.60) in women but not in men. However, residential area was not associated with risk of stabbings, burns and poisoning in both sexes. These association were attenuated after adjusting for socio-economic status.

CONCLUSIONS: From these results, we conclude that residents from rural areas are at a higher risk of having unintentional injuries compared to residents from urban areas. Futhermore, the associations we observed were gender-specific and injury subtype-specific. Therefore, from these results we suggest that gender-specific and residential area-specific strategies should be implemented into community programs to prevent injury.

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Social capital among people with arthritis in Rural Area

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OBJECTIVES: Recent studies have found that social capital and social connectedness are important to the health. However, there is little research examining social capital and the perception of social connectedness among people with arthritis. To examine and compare perceptions of social capital (network diversity, civic engagement, community belonging, trust in others and the health care system) in three groups of adults: 1) those with arthritis; 2) those with arthritis and with activity limitations; and 3) those without arthritis.

METHODS: We analyzed data from the 2013 the Community Health Survey (CHS). Three mutually exclusive groups were created consisting of individuals with: 1. Arthritis (i.e., self-reported physician diagnosis of arthritis); 2. Arthritis with activity limitations (AL) (i.e., AL reported as limiting the amount or kind of activity at home, work, school or other activities because of a physical or mental condition or health problem); 3. No arthritis. Social capital was assessed by measures of community belonging, trust in others, confidence in the health care system, civic engagement, and network diversity.

RESULTS: Arthritis with and without activity limitations was reported by 12.0% and 4.7% of the sample, respectively, with increasing frequency with age. No significant differences between the three groups were found for network diversity, civic engagement, or community belongingness. However, people with arthritis and activity limitations were significantly less likely to report being trusting of others and individuals with arthritis both without and with activity limitations had significantly less confidence in the health care system than those without arthritis, with the arthritis and activity limitation group having the lowest confidence.

CONCLUSIONS: Although people with arthritis (with or without activity limitations) felt equally well connected to the community, lower levels of trust of others and confidence in the health care system they report are concerning. Future research needs to examine the link between trust and health as well as whether there are implications for seeking or adhering to the health care treatment and disease management.

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Policies and approaches for improving the access to health care in rural areas

Analysis of Medical Expenses Structure for Patients on Percutaneous Coronary Intervention by Medical Security Type

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OBJECTIVES:

This study was analyzed to investigate the differences of medical costs by medical security type and the influential factors on the medical expenditure of the heart diseases patient's percutaneous coronary intervention in South Korea.

METHODS:

The subjects of study are the 1,904 patients who were on the PCI list of a medical university hospital from 1 January 2011 to 31 December 2012, since the total medical cost should be included benefit medical cost and non-benefit medical cost. It is analyzed by SPSS statistical program and Research Ethics Review has received from Chungnam National University Hospital Clinical Trials Review Committee.

RESULTS:

The total medical cost of the national health insurance is higher than the medical aid patients, but there was no significant difference.
The itemized total medical cost, medical aid was significantly higher in physician fee and admission charges, meals, medication and injection fee but, the charges for an operation, non-benefit medical cost, optional medical cost was significantly lower.
The daily total medical cost to figure out the medical service utilization intensity, national health insurance is higher, but there was no significant difference.
The itemized daily total medical cost, medical aid was significantly higher in meals and, significantly lower in non-benefit medical cost.
The analysis on factors influencing PCI patient's medical cost by hierarchical regression analysis model, the history of PCI, PCI lesion number, stent number, hospital stay, outcome, medical security type was significant.

CONCLUSIONS:

The medical cost showed different structure by medical security type in the treatment of severe diseases such as coronary intervention, and the medical security type is significant factor of the medical cost.
Thus, the medical aid patient has a low socio-economic status can be limited to expensive non-benefit and optional medical services utilization.

Current situation of severe motor and intellectual disabilities in a rural area, the Saku region of Nagano Prefecture

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OBJECTIVES:

Recent advances in pediatric medicine have led to an increase in severely disabled children that require medical care at home. Our aim of this study is to ascertain what kind of life they lead in a rural area, the Saku region of Nagano Prefecture.

SUBJECTS:

Severely motor and intellectual disabled children were defined as those who could neither take a standing position nor speak the meaningful words. We had a survey on 33 children (17 male and 16 female) aged less than 6 years (n=9), 7 - 15 years (n=19) and 16 - 18 years (n=5) who live in the Saku region. Thirty-two children spend their life at home and one has been institutionalized.

RESULTS:

Each primary disease causing their disabilities was asphyxia (n=7), congenital malformations syndrome (n=9), unknown intellectual disability (n=4), acute encephalopathy (n=3), Leigh encephalopathy (n=2), drowning (n=2), and each one of severe myoclonic epilepsy, trauma, Guillain-Barre syndrome, arteriovenous malformations, laryngitis and meningitis. Medical managements were performed, such as tracheotomy (n=10), larynx trachea separation surgery (n=4), ventilator treatment (n=3), gastrostomy tube placement (n=14) and routine nasogastric tube (n=1). Two cases regularly receive the visiting medical examination and care, and the rest do outpatient care. Twenty four children aged more than 6 years are enrolled in a school for disabled children and four of them receive educational support at home. As for the support in the region, the visiting nurses take care of 10 children, especially those who need medical care such as tracheostomy and gastrostomy. The short stay service and the day service of outpatient support after school are used by children, 11 and 19, respectively.

CONCLUSIONS:

Further enhancement of the short stay facilities and child day care service will be required for severely disabled children. We hope that a safe and comfortable society for all individuals in the near future can be created.

Examination of support needed to continue home care in the community (1): Differences in occupations and training of staff involved in home care

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OBJECTIVES: Home medical and nursing care are growing to cope with the shortage of convalescent centers caused by rapid societal aging. We examined how differences in occupations and training of home care staff affect support for continuing such care.

METHODS: A postal questionnaire survey was conducted on 1,010 staff members involved in home medical and nursing care (valid response rate, 50.9%).
Survey content: Sixteen types of support needed to continue home care were extracted from cases in which dying at home was realized following the continuation of such care (Tsukahara and Mizukami, 2014), and these were divided into the introduction (5 items), continuation (7 items), and terminal (4 items) phases of home care. The extent to which these 16 items supported home care continuation was examined using the 4-category method. The training topics consisted of 11 items, including the nursing care insurance system, home palliative care, and the community-based clinical path, and whether or not staff received training in these areas was examined.
Analysis: SPSS software was used for statistical analysis.
Ethical considerations: The study was conducted following review by the Jin-ai University Institutional Review Board .

RESULTS: A 2-factor analysis of variance (ANOVA) was first performed to examine whether the level of support differed in each of the phases of home care depending on the type of occupation (healthcare/social welfare) and extent of training (low group, 0-2 training courses taken; moderate group, 3-5; high group, ≥6). As a result, in the introduction and terminal phases, only main effects were seen for the type of occupation (introduction phase: $F(5.97)=0.015$, $p<.05$; terminal phase: $F(27.08)=0.00$, $p<.01$) and extent of training (introduction : $F(10.37)=0.00$, $p<.01$; terminal : $F(3.46)=0.03$, $p<.05$). In the continuation phase, a significant difference was seen only for the extent of training ($F(3.46)=0.032$, $p<.05$), with more support provided by the high group than the low group ($p<0.05$).

CONCLUSIONS: That is, those in healthcare-related occupations provided more support for continued home care than those in social welfare-related occupations, and support resulting in home care continuation increased with the number of training courses taken. During the continuation phase, no difference was seen according to the type of occupation; the only difference seen was for the extent of training.

REFERENCES: Differences in the type and extent of training affected support for continuing home care.

Examination of support needed to continue home care in the community (2): Creating a Scale of Difficulty in Continuing Home Care

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OBJECTIVES: Home care is medical care provided at the patient's "place of residence" to support individuals needing care and their families. Therefore, it is necessary to have cooperation among a broad range of professionals extending beyond healthcare workers and to utilize a broad range of social resources. This study aimed to elucidate the difficulties experienced by medical providers when continuing home care.

METHODS:

1. Participants: We conducted a questionnaire survey by mail targeting 1,010 staff involved in home care/nursing. The collection rate was 53%. In regards to gender, 99 respondents were men and 441 were women. In regards to age, 61 respondents were in their 20s, 147 in their 30s, 157 in their 40s, 125 in their 50s, and 50 in their 60s.

2. Survey Contents: Referencing previous research and opinions of medical staff, we created 24 items to inquire about difficulties experienced when continuing home care and sought responses using a five-point Likert scale, from "not at all difficult" (1 point) to "very difficult" (5 points).

3. Analysis Method: IBM SPSS Statistics ver19.0 was used for analysis.

4. Ethical Considerations: This study was performed upon receiving approval from the Jin-ai University Ethics Committee.

RESULTS: First, we performed exploratory factor analysis on the 24-item scale of difficulty in home care (maximum-likelihood method, varimax rotation). As a result, three nameable factors were extracted; namely, factor one was a mismatch between intentions and opinions (Cronbach's coefficient alpha: .89), factor two was concern over continue caregiving (α=.82), and factor three was anxiety regarding cooperation and coordination (.85). The α coefficient of the entire scale was .89, which is considered to show internal validity.

Next, we investigated whether or not differences could be found by age (20s-30s, 40s, 50s-60s) and gender (male, female) in regards to the entire scale of difficulty in home care and each factor. Results showed only a main effect by gender for the entire scale and factor three, with women experiencing difficulty more easily than men (entire scale: $F(1,534)=7.03$, $p<.01$, factor three: $F(1,534)=8.33$, $p<.01$).

CONCLUSIONS: The 13-item Difficulty in Continuing Home Care Scale is a simple, valid, and reliable tool to assess difficulty for continued home care.

Relationship between Bone Mineral Density and Remaining Teeth and Its Related Physiological Factors in Postmenopausal Women

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Objectives: Osteoporosis is one of the most common metabolic bone diseases in postmenopausal women and its prevalence is increasing relate to rapid ageing process in some country. Some studies proposed the relationship between osteoporosis and oral health. This study investigated the association between bone mineral density (BMD) and remaining teeth and to identify the determinant female-related physiological factors for osteoporosis and remaining teeth among postmenopausal women in Korea.
Methods: A total of 3,992 postmenopausal women aged 50 years old or above were selected from the Fourth and Fifth Korea National Health and Nutrition Examination Survey, which were held from 2008 to 2011. Bone mineral density and remaining teeth were assessed by trained researchers. Socioeconomic characteristics and female-related physiological factors such as menarche age, duration of menopause, number of pregnancies, childbearing age, duration of taking oral contraceptives and female hormones were surveyed.
Results: Participants who had lower BMD showed fewer remaining teeth significantly (p<0.0001). Out of female-related physiological factors, duration of menopause showed significantly strong relationship to both BMD and remaining teeth (p<0.0001). In multiple regression analysis, age, income, education level, BMI, duration of menopause, childbearing age, and duration of taking female hormone drugs were related to remaining teeth.
Conclusions: It was observed that postmenopausal women with osteoporosis had significantly low number of remaining teeth compared to that of normal women. Therefore, we conclude that special care is suggested to promote oral health of postmenopausal women.