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ABSTRACT

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Cost-Benefit Analysis of Mental Health Activities in the Workplace

Nippon Eiseigaku Zasshi, 68, 67–71 (2013)
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In order to examine the cost-benefit of mental health care activities in the workplace, the total costs of the fiscal year 2005, during which the old-type mental health care was conducted, and those of the fiscal years from 2006 to 2008, during which the new-type mental health care was conducted according to the governmental guidelines of each year, were compared using about 3,000 workers in a particular workplace in 2005. The total cost comprised the sum of the medical fees, the payment compensation for sick absences, and expenditures for health care activities of mentally ill health workers. The total costs from 2006 to 2008 were not markedly different from those in 2005, and the benefit due to new-type activity was not shown. However, the following was found: payment compensation for sick absences accounted for 60 % of the total cost; personnel expenses which were a large part of the expenditure of health care activities largely changed over the years because of the age structure of the staff in charge. The results show that a cost-benefit analysis may be a useful tool for examining health care activities in the workplace for various members in the workplace although health care issues usually tend to be solved by specialists.

Application of Multiple-Attribute Utility Technology (MAUT) to Decisions about a Work-Site Stress-Control Intervention for Public-Sector Office Workers

Nippon Eiseigaku Zasshi, 68, 72–77 (2013)
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The reasons behind the establishment of particular health-promotion programs in community or work settings are often unclear, and such programs are rarely evaluated from a broad perspective after they are implemented. Thus, multi attribute utility technology (MAUT) was used to design a work-site stress-control program. The sample consisted of public-sector workers in B City in Japan. Stakeholders in the work-site stress-control program included employers (municipal authorities), employees (public workers), and healthcare personnel. Six goals and three strategies (i.e., personnel, self-care, and staff) related to stress-control programs were considered.

The results showed that the self-care strategy received the highest score for overall utility (i.e., 96.2), and the overall-utility score for the remaining two strategies was approximately 70. The self-care strategy emerged as the most useful of the three strategies for developing a stress-control program in a target work place. The application of MAUT may be useful for developing an effective stress-control program in occupational settings.

The IARC Carcinogenicity Evaluation of Radio-Frequency Electromagnetic Field: With Special Reference to Epidemiology of Mobile Phone Use and Brain Tumor Risk

Nippon Eiseigaku Zasshi, 68, 78–82 (2013)
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The International Agency for Research on Cancer of World Health Organization announced in May 2011 the results of evaluation of carcinogenicity of radio-frequency electromagnetic field. In the overall evaluation, the radio-frequency electromagnetic field was classified as "possibly carcinogenic to humans", on the basis of the fact that the evidence provided by epidemiological studies and animal bioassays was limited. Regarding epidemiology, the results of the Interphone Study, an international collaborative case–control study, were of special importance, together with the results of a prospective cohort study in Denmark, case–control studies in several countries, and a case–case study in Japan. The evidence obtained was considered limited, because the increased risk observed in some studies was possibly spurious, caused by selection bias or recall bias as well as residual effects of confounding factors. Further research studies, such

as large-scale multinational epidemiological studies, are crucially needed to establish a sound evidence base from which a more conclusive judgment can be made for the carcinogenicity of the radiofrequency electromagnetic field.

Health Effects of Solar Cell Component Material: Toxicity of Indium Compounds to Laboratory Animals Determined by Intratracheal Instillations

Nippon Eiseigaku Zasshi, 68, 83–87 (2013)
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Owing to the increasing interest being paid to the issue of the global environment, the production of solar cells has increased rapidly in recent years. Copper indium gallium diselenide (CIGS) is a new efficient thin film used in some types of solar cell. Indium is a constitutive element of CIGS thin-film solar cells. It was thought that indium compounds were not harmful until the beginning of the 1990s because there was little information regarding the adverse health effects on humans or animals arising from exposure to indium compounds. After the mid-1990s, data became available indicating that indium compounds can be toxic to animals. In animal studies, it has been clearly demonstrated that indium compounds cause pulmonary toxicity and that the dissolution of indium compounds in the lungs is considerably slow, as shown by repeated intratracheal instillations in experimental animals. Thus, it is necessary to pay much greater attention to human exposure to indium compounds, and precautions against possible exposure to indium compounds are paramount with regard to health management.

Present Situation and Research Task on the Assessment of Psychological Effects Caused by Low-Frequency Noise

Nippon Eiseigaku Zasshi, 68, 88–91 (2013)
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Wind power generation is one of the good solutions to ensuring a clean and sustainable energy source. In recent years, therefore, many facilities for wind power generation have been constructed in Japan. In contrast to its advantage, however, residents in some areas near a wind power generation site have complained that their well-being has been disturbed by noise from wind turbines. Wind turbines generate low-frequency noise, which can lead to adverse psychological effects such as annoyance. In Japan, the method of assessing appropriately the adverse effects caused by low-frequency noise has not been established. In this article, the characteristics and effects of low-frequency noise are outlined, and the present situation and research task on the assessment of psychological effects of low-frequency noise from wind turbines are presented.

Overview of and Update on the Physiological Functions of Mammalian Zinc Transporters

Nippon Eiseigaku Zasshi, 68, 92–102 (2013)
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In recent years, a number of mammalian zinc transporters have been molecularly characterized. This has brought about major advances in our understanding of the tight regulation of cellular zinc homeostasis and the pivotal roles zinc transporters play in a variety of biological events. Mammalian zinc transporters are classified into two families: the ZRT, IRT-like protein (ZIP) family and the Zn transporter (ZnT) family. The ZIP family consists of 14 members and facilitates zinc influx into the cytosol from the extracellular and intracellular compartments. The ZnT family consists of nine members and facilitates zinc efflux from the cytosol to the extracellular and intracellular compartments. Coordinated zinc mobilization across the cellular membrane by both transporter families is indispensable for diverse physiological functions. In this review, the features of the ZIP and ZnT families are briefly reviewed from the perspective of zinc physiology, with emphasis on recent progress.

Effects of School Closure during Influenza A/H1N1 Pandemic in 2009 in Japan

Nippon Eiseigaku Zasshi, 68, 103–117 (2013)
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Schools were closed worldwide during the 2009 influenza A/H1N1 pandemic to prevent the viral spread; however, to date, there has been insufficient evidence to conclude that the closures were beneficial. Therefore, in the present review, we evaluated the effects of school closure during the 2009 influenza A/H1N1 pandemic in Japan. A search of PubMed and Japanese journals identified 24 articles that evaluated the effects of school closure using the following methods: descriptive epidemiology, changes in absenteeism rate, a simulation model, and reproductive number. Almost all of the retrieved studies showed that school closure effectively reduced the number of new infections and thus subsequently suppressed the epidemic. On the other hand, two major sets of confounding variables were identified. First, the effect of school closure was confounded by the methods used to measure, viral infectivity, subject characteristics, increased immunization rates, nonpharmaceutical interventions, antiviral administration, student contact patterns during school closure, and individual household environments. Secondly, school closure implementation was affected by differences between proactive and reactive closures, differences between seasonal and pandemic influenza, decision factors regarding school closure, socioeconomic cost, and ethics of imposing restrictions on individuals. Therefore, a comprehensive, longitudinal study is necessary to clarify the effects of school closure during viral pandemics.

Development of a Monitor for Quantifying Personal Eye Exposure to Visible and Ultraviolet Radiation and Its Application in Epidemiology

Nippon Eiseigaku Zasshi, 68, 118–125 (2013)
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Objective Eye diseases including cataract, keratitis and pterygium have been reported to be sun-exposure-related. The association between macular degeneration and blue light has also been discussed. Moreover, it is hypothesized that retinal exposure to blue light may influence the human circadian rhythm. However, no monitoring devices exist that can measure eye exposure to visible and ultraviolet (UV) radiation over time. To measure the exact dose at specific times, we have developed a novel sensing system (ray-sensing glass system: RaySeG).
Methods RaySeG can continuously measure and record the composition and intensity of light with a time-stamped system. Subjects wearing RaySeG were instructed to walk under various light conditions such as indoor and outdoor.
Results RaySeG consists of two sensors embedded in the eyeglasses. These sensors are for UV (260–400 nm), visible lights (red, 615 nm; green, 540 nm; and blue, 465 nm: peak wavelength for each). The total weight of the system is about 100 g, and the size is comparable to that of a digital audio player. The system continuously recorded changes in visible and UV light exposure under various conditions.
Conclusions After accuracy validation, further experiments with a larger number of subjects are required. Our final goal is to apply the system to evaluating personal eye exposure to UV and visible light in epidemiological studies of eye diseases and circadian rhythm abnormality.

Study of Perception Gaps in Pharmaceutical Terms and Related Issues between Laypeople and Medical Practitioners

Nippon Eiseigaku Zasshi, 68, 126–137 (2013)
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Objectives The purpose of this study was to clarify the gaps in the recognition of medical terms mainly related to medicines between laypeople and medical practitioners in order to contribute to improving risk communication in the medical care field.
Method A total of 315 laypeople and 211 doctors were surveyed. To examine the gaps between them, we adopted 57 medical terms from the National Institute for Japanese Language and further added 33 medical terms. In total, 90 medical terms were used.
Results For the medical terms group into the "Expressed in other words of vernacular speech", the recognition by the laypeople was low and that estimated by the practitioners was high. For the newly added medical terms groups into the clinical-trial-related terms and medical terms related to side effects, the recognition by the laypeople was lower than that estimated by the practitioners. Moreover, the recognition values for above two groups were smaller than the other groups.
Conclusions The gaps between the basic recognition of the medical terms by laypeople and that estimated by the practitioners suggest that the possibility that patients cannot recognize much more difficult terms should be considered.

WHO Healthy City Initiative in Japan

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City environmental conditions are associated with health outcomes in people living there. World Health Organization (WHO) initiated Healthy City in 1986. To promote the networking, Alliance for Healthy Cities (AFHC) was launched in 2003 with local offices including AFHC Japan. As of 2010, 26 cities are members of AFHC Japan. A questionnaire was sent to those member cities. It includes questions on why they became an AFHC member, which section is in charge of the initiatives, what factors are important for promotion, and others. Out of the 26 cities, 13 cities returned the completed questionnaire. As for factors important for promoting the initiatives, 10 (77 %) out of the 13 cities answered "consciousness of residents", while five (38 %) chose "budget". This result suggests that community participation is a more important factor than budget for promoting and succeeding in the initiatives. Aging is a problem in any of the member cities, and six cities out the 13 falls under the category of super aged society, which is defined as a society with the proportion of aged people <65 years being greater than 21 % of the whole population. Eleven cities (85 %) agreed that bicycles are an alternative means of transportation to cars; however, infrastructure for ensuring safety needs further improvement. In the promotion of Healthy City, networking among the member cities in Japan and worldwide should be promoted. Community participation with empowerment from the planning stage should lead to sustainable initiatives. The function of AFHC in collaboration among the members should be strengthened to cope with the rapidly changing city environment.