safety programs were also associated with better self-reported safety performance of coworkers, crews, and individual workers. Stronger safety programs incorporated activities from all four domains Safety programs that include activities that cover safety of management and worker influence safety performance and safety climate as perceived by the workers.

P.1.09 RISK ASSESSMENT OF EXPOSURE TO FORMALDEHYDE IN UNIVERSITY LABORATORIES

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10.1136/OEM-2019-EPI.215

Objective Formaldehyde is a commonly used chemical in laboratories and has been regarded as a potential hazard to health. Researchers and students who work in medical laboratories have potentially a higher risk of exposure to Formaldehyde. The aim of this study was to determine the risk of exposure to formaldehyde and its health effects in laboratories.

Methods In a cross-sectional survey air samples were collected with charcoal tubes from 23 anatomy, pathology and histopathology laboratories. Personal and time weighted exposures of 102 samples were sampled and analyzed using OSHA method. A questionnaire was distributed to 83 participants engaged in laboratory activities to examine the adverse health effects of formaldehyde.

Results Overall, 92.3% of the personal exposure levels were higher than the occupational exposure limit. The area concentrations ranged between 0.234 ppm and 3.45 ppm (mean=1.43 ppm, SD=0.45). Individual exposure levels in respiratory zone ranged 0.219 ppm and 1.96 ppm (mean=0.573 ppm, SD=0.39). The risk of Formaldehyde exposure levels were higher for researchers and technicians compared to students with a factor of two or three. Participants with a duration of exposure more than 2 years had an increased risk of health symptoms (Hazard ratio=1.4; Confidence Interval=0.8–3.7). Laboratory personnel reported physical fatigue (39.1%), headache (32.7%), breathing problems (21.1%), noise irritation (17.4%), and eye irritation (14.9%).

Conclusion The concentration levels of Formaldehyde vapor in laboratory indoor air were higher compared to individual exposure levels. Work in laboratories is associated with exposure levels exceeding the recommended exposure limit and an increased risk of health complaints. Preventive measures are required to reduce the emission of airborne formaldehyde and prevalent health-related symptoms in academic medical laboratories.

P.1.11 'CREATION OF CLASSIFICATION MODEL USING MACHINE LEARNING; TO DETECT DYSPHONIA WORK-RELATED'

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10.1136/OEM-2019-EPI.216

The underdiagnosis of occupational disease causes severe damage to the health system. The classification of a disease as a professional is based on the decision on whether the present labor factors are sufficient for the generation of the disease,

and this function is carried out by a qualified professional or committee.

Occupational dysphonia is one of the 5 most frequent occupational diseases in Chile, whose condition impact on the labor productivity and the quality of life of the patient. Today there are no unified criteria among the occupational qualification decision makers to decide on the sufficient of labor factors of occupational dysphonia disease.

Computerized systems have been developed to support clinical diagnosis decision-making process; among these, Machine Learning methods have been used to simulate the reasoning of the expert from the analysis and identification of complex patterns in large databases, so in this study it is suggested that the creation of a dysphonia classification model is possible employing Machine Learning tools. For this purpose, 103 cases obtained from patients with qualification results cause by dysphonia was analyzed in relation to the number of variables studied and their distribution for the observation of the characteristics that give identity to the groups studied. Subsequently, different classification models were developed using Machine Learning and the one that presented the best performance was chosen.

Statistical analyzes show that of the 6 models of Machine Learning elaborated, Random Forest was the one that presented the best performance (accuracy=0.83 and Kappa value=0.61), variables that manage to establish identity to each group represent 26.5% of the total of studied variables. The results in this work show the potential of the use of computer tools can be useful as a support tool for diagnosis of occupational disease.

P.1.12 PARTICULATE MATTER MEASUREMENT SYSTEM USING LOW COST SENSOR AND INTERNET OF THINGS

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10.1136/OEM-2019-EPI.217

The Internet of Things (IoT) is an important keyword in the Fourth Industrial Revolution. IoT is expected to have a massive impact for human being, but these are still early days. IoT enables these objects to collect and exchange data through the wireless network, such as devices, vehicles, buildings, and other items that include electronic devices, software, sensors, and network connections. IoT is a technology that can be used and expanded in various applications such as industrial, manufacturing, medical and consumer products and so on. This research focuses specifically on the development of measurement systems for particulate matter using IoT technology for occupational as well as environmental settings. Currently, the government is providing the concentration of particulate matter (PM_{2.5}/10) hourly. However, it is difficult to reflect personal exposure because it is installed on the top of a building. Therefore, this study shows development of the particulate matter measuring system using IoT and obtains the personal measurement data of the particulate matter. Also, to provide a further insight, we will also present how particulate matter measurement system works by showing some measurements collected with an experimental testbed deployed in our research group. Still, it is necessary to improve the quality of system and the convergence between pollutant measurement including particulate matter and IoT can provide new

opportunities for occupational and environmental particulate matter measurement system.

Acknowledgement This work was supported by Gachon University research fund of 2018(GCU-2018-5259) and the National Research Foundation of Korea (NRF) grant funded by the Korea government (Ministry of Science, ICT) (No. NRF-2017R1C1B1002717).

P.1.15 MERCURY HAZARDS AND HOW THE COMMUNITY RESPONSES IN DEVELOPING COUNTRY

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10.1136/OEM-2019-EPI.218

Introduction Heavy metal like mercury was used directly or indirectly since long ago before it was stopped around the world. Since, the value of the metal and its availability in different use in medical appliances is still one of the burdens in developing country like Nepal. The main uses of mercury are in dental amalgam, sphygmomanometers, and thermometers. The mercury once released into the environment can remain for a longer period. Both acute and chronic poisoning can be caused by it. Half of the mercury found in the atmosphere is human generated and health care contributes the substantial part to it. WHO and UNEP issued new guideline for health care sector to become mercury free.

Aim and methods To find out the Knowledge, attitude and practice due to hazards of mercury contact among paramedics and patients.

Results and conclusion 938 paramedics and 890 patients were asked indepth structured questions about mercury hazards and update knowledge. Overall 18% of the paramedics have no knowledge of mercuryfree with respect to 69% of the patients. Around 49% of paramedics have broken mercury thermometer in their career and contact with skin. However, 1.2% patient only have a similar history in their life time. 4% of the contamination with mercury having SKIN problems. 32% of the patients still have mercury thermometer and sphygmomanometer in their home with respect of 0.6% of paramedics. The above study showed that Healthcare worker has more knowledge of Mercury hazards than patients groups. However, paramedics have broken the mercury instruments than patients party. Similarly, Paramedics have Mercury free device at home than patients groups. It means awareness, literate people having more knowledge towards its practice making mercury free society in a resource poor country like Nepal.

P.1.16 PHYSICAL HEALTH OF TRANSITIONED ADF AND REGULAR ADF MEMBERS IN 2015: FINDINGS FROM THE TRANSITION AND WELLBEING RESEARCH PROGRAMME

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10.1136/OEM-2019-EPI.219

Introduction Military service can involve exposure to physical and psychological stressors. There has been little systematic research into the health and wellbeing of military personnel after they leave the services.

Methods 4326 Transitioned ADF (transitioned from regular Australian Defence Force service between Jan 2010–Dec 2014) (18% response) and 8480 Regular 2015 ADF (42%) completed a questionnaire including symptoms, doctor-diagnosed medical conditions, respiratory health, injuries, pain, sleep problems, lifestyle factors, self-perceived health and quality of life and health service use.

Results Transitioned ADF reported a higher mean number of symptoms (16.4 vs 11.8), similar mean number of medical conditions (1.9 vs 1.5), were more likely to report some medical conditions (a circulatory, musculoskeletal/connective tissue or nervous system condition, high blood pressure, chronic low back pain, and hearing loss), a slightly higher mean number of service-related injury types (1.11 vs 0.96), and poorer self-perceived health and quality of life compared to 2015 Regular ADF. Service-related injuries were more likely to have been sustained during training than on deployment in both groups. The majority of Transitioned ADF and 2015 Regular ADF reported experiencing some pain intensity and disability.

In Transitioned ADF, poorer physical health outcomes overall were reported in Department of Veterans' Affairs (DVA) clients compared with non-DVA clients, in Ex-Serving compared with Active Reservists or Inactive Reservists, and in those who had been medically discharged compared with those discharged for other reasons.

Conclusion This was one of the first studies internationally to investigate a comprehensive range of physical health indicators in recently transitioned military personnel. Overall Transitioned ADF were more likely to report poorer physical health across domains, some subgroups appeared particularly at risk. Findings in DVA clients were consistent with DVA being the conduit for care in veterans who have a service-related injury or mental health condition.

P.1.17 WORKING TIME, SMOKING, AND CAFFEINE INTAKE BY WORKING TYPE OF TAXI DRIVERS IN KOREA

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10.1136/OEM-2019-EPI.220

Taxi drivers in Korea are known to work long hours and receive low wages. In addition, there are various forms of working, so that they can work 12 hours a day for 2 shifts, work only at night or day time, and drive a car whole day alone (14–15 hours a day). We surveyed their specific hours of work, and smoking and caffeine consumption. In this study, 11 business sites were selected for taxi companies in Seoul considering region and workplace size, and survey was conducted for all taxi drivers belonging to the relevant business sites. The questionnaire consisted of demographic characteristics, working hours and working conditions, violence experience, emotional labor status, physical and mental health status, sleep health, traffic accidents and traffic violation experience. A total of 698 respondents (39.6%) answered the questionnaire. 76.2% were working 25–26 days a month. 49.2% of the workers worked more than 60 hours per week and less than 70 hours per week. 52.8% of drivers were current smokers, and 65.9% of those who work fixed night shift were current