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Risk of Heat-Related Mortality, Accident, and Injury among Korean WorkersWanhyung Lee*Gachon University Gil medical center, Occupational and environmental medicine, Ichoen, Republic Of Korea*

Introduction: Only few studies have shown that heat waves can cause both death and accident focused on workers. The present study investigated the association between heat exposure and the likelihood of hospitalization and death, and further identified the risk of heat-related death according to types of heat and dose-response modeling with heat threshold.

Methods: Workers were selected from the Korean National Health Insurance Service-National Sample Cohort 2002–2015, and regional data measured by the Korea Meteorological Administration were used for information on weather. The relationship between hospitalization attributable to disease and weather variables was analyzed by applying a generalized additional model. Using the Akaike Information Criterion, we selected a model that presents the optimal threshold.

Results: Maximum daily temperature (MaxT) was associated with an increased risk of death and outdoor mortality. The association between death outdoors and MaxT had a threshold of 31.2°C with a day zero lag effect. History of medical facility visits due to the health effects of heat waves was pronounced in certain injury, poisoning, and other consequences of external causes (S,T).

Conclusions: The study demonstrates that heat exposure is a risk factor for death, injuries, and accidents among workers. The finding that heat exposure affects workers' health has future implications for decision makers and researchers.

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Global warming and high temperature increase the risk of stillbirth in the third trimesterHsiao-Yu Yang¹, Jason Kai Wei Lee²*¹ National Taiwan University, Institute of Environmental and Occupational Health Sciences, Taipei, Chinese Taipei, ² National University of Singapore, Human Potential Translational Research Programme, Yong Loo Lin School of Medicine, Singapore, Singapore*

Introduction: Evidence on adverse effects of temperature on stillbirth in Asian countries is lacking. The objective of this study was to assess the impact of temperature on the stillbirth rate.

Material and Methods: We collected monthly temperature and stillbirth in Taiwan from 2009 to 2018. We performed a time-series analysis to predict the risks of stillbirth and explored the associations between temperature and stillbirth with a distributed lag nonlinear model. We calculated the number of stillbirths attributable to hot and cold temperatures, which corresponded to the optimal temperature with the lowest stillbirth rate.

Results and Conclusions: We analyzed 22,769 stillbirths that occurred between 2009 and 2018. The mean stillbirth rate was 1.13±0.14%. The relative risks of stillbirth due to exposure to cold (<20°C), mild heat (22–25°C), moderate heat (25–29°C), and extreme heat (>29°C) were 1.08 (95% CI 1.02, 1.14), 1.10 (95% CI 1.04, 1.17), 1.15 (95% CI 1.09, 1.22), and 1.18 (95% CI 1.11, 1.25), respectively. Hot temperature exposure was responsible for a higher attributable fraction of stillbirths (8.34%, 95% CI 0.05, 0.11) than cold

temperature exposure (1.89%, 95% CI 0.01, 0.03). Pregnant women in the third trimester were most susceptible to the effects of extreme temperatures. The greatest cumulative effect of extremely hot temperature was found in the 97.5th percentile of temperature (29.8°C) relative to the optimal temperature (21°C) at lag 0–3 months, with a cumulative relative risk of 2.49 (95% CI: 1.24, 5.03). We recommend effective interventions to prevent the reproductive hazards caused by climate change.

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Investigation of heat stroke risk factor in the workplace by large-scale web surveySatoru Ueno^{1,2}, Naomi Hisanaga³, Shibata Nobuyuki^{1,2}*¹ National Institute of Occupational safety and Health, Japan, ² Work Environment Research Group, Kawasaki, Japan, ³ Aichi Gakusen University, Department of food Science and Nutrition, Okazaki, Japan*

Introduction: Many risk factors are listed for the development of heat stroke in the workplace, but there is little evidence. The purpose of this study is to clarify risk factors of heat stroke.

Material and Methods: We conducted a large-scale web survey on work-related heat stroke. Blue-collar workers (security, primary industry, production process, transportation/ mechanical operation, construction/ mining, cleaning) accounted for 46%, white-collar workers (administration, professionals, office worker) 26%, and others (commercial and service) 28%. The questions were experience of heat exposure and heat stroke during work, working hours, working environment, lifestyle, family status, health conditions etc. After cross-tabulating the number of people who had heat exposure and heat stroke for each question, chi-square test was performed. Logistic regression analysis was also performed with the experience of heat stroke on the job as the objective variable and the questions with significant differences in the chi-square test as the explanatory variables.

Results: For blue-collar workers, age, smoking, sleepiness during work, chronic disease, taking medicine, lack of exercise, health conditions, job category, heat stroke experience of relatives, weekly working days, drinking freely, breaking freely, time to toilet, urine color, labor burden, satisfaction with heat stroke measures were significant for heat stroke onset by chi-square test. For logistic regression, similar results were obtained.

Conclusions: The results of this study provide useful information on measures against heat stroke in the workplace.

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A seasonal trend of ambulance transport from workplaces in Aichi prefecture, JapanTomohiro Umemura¹, Akihiko Narisada², Rei Wakayama¹, Reiko Hori¹, Masahiro Matsunaga¹, Eiji Shibata³, Kohta Suzuki¹*¹ Aichi Medical University, Department of Health and Psychosocial Medicine, Nagakute, Japan, ² Aichi Medical University, Institute for Occupational Health Science, Nagakute, Japan, ³ Yokkaichi Nursing and Medical Care University, Department of Nursing, Yokkaichi, Japan*

Introduction: In Japan, survey of industrial accidents conducted by Ministry of Health, Labour and Welfare is used to analyze a trend of accidents occurred in workplaces. However, the survey includes