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participated in strength or toning activities. There was a reduction (although not statistically significant) in BMI and in bodyweight post intervention. However, weight loss of a 0.74 kg on average per participant is clinically significant, and substantial considering the impact of the COVID-19 global pandemic and global weight gain.

Conclusions: Sedentary behaviours are a key contributor to increasing levels of overweight and obesity. Workplace wellness programs may prove efficacious in reducing sedentary behaviours, reducing over-weight and obesity and improving employee general health.

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Examining particulate matter exposures in & around an opencast coal mine in Southern India

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Introduction: Particulate matter (PM) from opencast mining operations has significant environmental & occupational consequences. Exposure to PM10 & PM2.5 can pose health risk to both mine workers & community residing around the mine as pollutants disperse in the area. This study aims to evaluate the spatial distribution of PM & determine exposures from an opencast coal mine in Southern India.

Materials and Methods: Secondary data for bi-weekly ground-based observations of PM10 & PM2.5 collected between March 2017-April 2018 were obtained for the Manuguru Opencast Coal Project, Bhadradri-Kothegudem district, Telangana, India. Observations were made from ten locations situated 0.5 – 5 km from the mine & Inverse Distance Weighted interpolation model was applied to determine PM concentrations at specific operation sites (within mine) & residential areas (outside mine) using QGIS 3.10.

Results and Conclusion: Spatial interpolation revealed the highest concentration of pollutants inside the mining area. Interpolated seasonal PM10 concentration inside the mining zone were 151 – 170 µg/m3 (Summer), 112 – 122 µg/m3 (Monsoon), 99 – 100 µg/m3 (post-monsoon & winter) & PM2.5 concentrations were 54 - 60 µg/m3 (Summer), 45 - 48 µg/m3 (Monsoon), & 46 – 50 µg/m3 (post-monsoon & Winter). Summer PM10 concentrations were highest near the mine, suggesting likely contribution by enhanced resuspension of mine dust. Our study highlights the significance of pollutant modeling in mining areas for better occupational & environmental health practices. Further prediction of diesel & dust-related PM exposures through dispersion modeling is underway.

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Exploring the relationship between risk factors to occupational injuries and gender among artisanal gold miners in Kakamega, Kenya

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Introduction: Artisanal and small-scale gold mining (ASGM) is a source of livelihood for thousands of men and women in Africa. Despite both men and women engaging in this occupation, there exists disparities in how these two genders benefit economically from ASGM. In addition, regardless of ASGM being an important economic activity, both women and men are exposed to risk factors to occupational injuries while engaging in the work. This study therefore explored the relationship between injury risk factors and gender among miners in Rosterman, Kakamega county in Kenya. It also highlights other gender disparities in the engagement of ASGM.

Material and Methods: A descriptive cross-sectional study was carried out on 313 artisanal gold miners in Rosterman, Kakamega County. Both quantitative and qualitative data was collected on risk factors to occupational injuries. Chi-square test of association was carried out. SPSS was used to analyse the data.

Results: Men in the study comprised 68.7% , while women comprised 31.3%. From the chi-square test the following injury risk factors had a significant association to gender with P is significant if < 0.05. The significant risk factors included smoking, alcohol consumption, training on frequent mining activity, training on injury prevention, having a personal safety culture, day shift work hours and underground ore excavation.

Conclusion: Occupational injuries are prevalent among both women and men. Gender does have significant association with various occupational injury risk factors. Injury prevention measures in ASGM need to be gender-specific.

12. MUSCULOSKELETAL DISORDERS

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Musculoskeletal pain in the coronavirus disease 2019 pandemic: How is it related to work from home?

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Introduction: During the coronavirus disease 2019 pandemic, work from home (WFH) has a negative impact on a musculoskeletal system when performed in non-ergonomic conditions. Given that many workers experienced WFH for the first time during the pandemic, the aim of the study was to examine new working conditions and related musculoskeletal pain.

Material and Methods: The cross-sectional study included 722 participants (52.5% women, 46.5% men), aged 40.6 ± 8.9 years, who have been working from home between March 2020 and March 2021. They completed a self-administered WFH questionnaire about a job sector, working conditions, exercising, and musculoskeletal pain. The research was approved by the Ethics Committee of Zagreb University School of Medicine.

Results: The majority of participants (38.9%) were employed in the information technology sector. Most (90.6%) were using laptops for work, 60.4% had office desks, 40.9% had computer mice, and only 34.6% had office chairs available at home. Fourteen percent did exercises during work breaks, and 35.6% did it regularly regardless of a job. Sixty percent reported greater lumbar pain, 37.7% greater neck pain, and 19.8% greater hand pain than before the pandemic. Those with greater lumbar pain had office chairs less available than the others with constant pain or without any lumbar pain (P=0.010).
Conclusions: Workers mostly suffer from lumbar pain, and rarely did exercises or had office chairs available at home. WFH brings additional risks for the musculoskeletal system and should be better controlled by increasing the availability of ergonomic equipment and promoting exercising.

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Benefits of Ergonomics in Industrial Material handling

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Introduction: In any industry, it becomes essential for the operator to carry out the physical activity routinely number of times. In such cases adhering to wrong practices even inadvertently can become potential hazard as such wrong practices enhance the chances of the operator falling pray to backache over a period of time. Thus, adhering to suitable Ergonomic based practices help in minimizing the impact of backache on already affected operators and/or prevents the new operator from not getting affected from backache. This paper describes and how application of suitable Ergonomic principles in manual material handling is helpful in minimizing the impact of backache on the already affected operators and can also lead to its prevention among the new operators.

Materials and Methods: Retrospective case history data of backache cases observed during 1990 to 2016. Analysis of medical data recorded prior to the systematic study and that obtained after the implementation of the remedial measures.

Results: It shows a significant reduction in incidences of backache in post study era. Thus, the present study demonstrates the how application of principles of Ergonomics suitably can minimize the impact of Backache in persons carrying out manual operations routinely.

Conclusion: It is concluded that principles of ergonomics are very useful in general and particularly application of ergonomics in an industrial material movement offers great benefits like minimizing the impact of backache on already affected operators and/or prevents the new operator from not getting affected from backache.

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A health impact assessment of a preventive measure to reduce the risk of work-related low back pain, lumbosacral radiculopathy and knee osteoarthritis among construction workers in the Netherlands

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Introduction: Worldwide the construction industry is characterized by high physical work demands and prevalent work-related musculoskeletal disorders (MSDs). The two body regions with the highest one-year prevalence are the low back (51%, 95%CI 41–61) and the knee (37%, 95%CI 22–52). A job were workers are exposed to high physical work demands that are established risk factors for these complaints are floor layers. To prevent these complaints, a manual moved machine (MMM) was introduced to reduce the exposure to kneeling and bending of the back for floor layers in the Netherlands. The aim of this paper is to estimate the potential health gain of the MMM in preventing low back pain (LBP), lumbosacral radicular syndrome (LRS) and knee osteoarthritis (KOA) compared to the traditional working technique.

Materials and Methods: The potential health gain was assessed using the Population Attributable Fraction (PAF) and the Potential Impact Fraction (PIF). For LBP and LRS, the exposure limit was set at working 30 minutes per day with the back=40° flexed with a corresponding OR=1.7 and 2.4, respectively. For KOA this was kneeling 60 minutes per day with an OR=1.7. The percentage of workers exceeding these thresholds was based on worksite observations among 18 floor layers.

Results: For LBP, 9/10 workers were at risk using the traditional working technique with PAF=38%, and for MMM this was 6/10 with a PIF=13%. For LRS, these data were 9/10 with PAF=55% and 6/10 with PIF=18% and for KOA, 8/10 with PAF=35% and 2/10 with PIF=26%.

Conclusions: A MMM might have a significant impact on the prevention of LBP, LRS and KOA among floor layers.

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Prevalence Of Musculoskeletal Disorders Of Upper Limbs Of The Informal Sector : The Case Of Dyers From Anyama, Ivory Coast

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Introduction: informal sector dyeing activities expose workers to various risks including musculoskeletal disorders (MSD) of the upper limbs

Material and methods: We conducted a descriptive study over 10 months (July 1, 2018 to April 30, 2019), focusing on MSD of the upper limbs presented by the dyers of the informal economy of the town from Anyama. Data were collected using a survey form based on the Nordic Kuorinka questionnaire applied to the upper limbs.

The clinical diagnosis of MSD was made according to the european protocol for clinical examination for the identification of musculoskeletal disorders of the upper limb SALTSA.

Results: We recorded 110 dyers mainly female (60%) with an average age of 37.75 +/- 14.24 years. The average professional seniority was 13.35 +/- 11.84 years with extremes 1 and 46 years. We found an 87.27% prevalence of upper limb MSD. These were mainly rotator cuff syndrome (72.8%), neck pain (54.1%) and carpal tunnel syndrome (19.7%). In our study, professional seniority had a statistically significant link with the occurrence of TMS-MS (p = 0.001) in dyers.

Conclusion: MSD of the upper limbs have high prevalence among dyers, thus compromising the sustainability of activities already carried out under precarious conditions. Among the recommendations, we emphasize the value of training dyers on gestures and postures at work.