language. Studies that reported relevant effect estimates (e.g., ORs, HRs, SIs, and SMRs, considered equivalent to RRs) were eligible upon independent review and consensus by two authors. Results are presented in forest plots with corresponding meta-relative risk (mRR) estimates generated from random effects models to account for study heterogeneity.

Results The systematic review included 193 cohort (80%) and case-control (20%) studies. After the selection of preferred effect estimates as the most informative, 57 studies contributed unique effect estimates to meta-analyses for esophageal cancer; 100 for stomach cancer; and 88 for colorectal cancer. There were elevated mRRs for esophageal [1.17 [95% CI 1.07–1.29]], stomach [1.13 [1.06–1.21]] and colorectal [1.17 [1.09–1.26]] cancers associated with ever versus never occupational asbestos exposure. Unexplained heterogeneity was reduced, and the strength of association increased, in the analyses of studies with better exposure assessment and increased confidence of high asbestos exposures, including among workers in the highest versus lowest exposure-response categories (e.g., mRR=1.31 [1.10–1.57] for stomach cancer); among workers with a history of significant occupational exposure (e.g., mRR=1.68 [1.19–2.36] for esophageal cancer among insulators/insulating manufacturing workers); and among workers in cohorts with a two-fold or greater increased risk of asbestos-related lung cancer (e.g., mRR=1.51 [1.37–1.66] for colorectal cancer). Sensitivity analyses indicate minimal influence from any single study on meta-estimates or from publication bias.

Conclusion The evidence synthesis supports a causal link between occupational asbestos exposure and esophageal, stomach and colorectal cancer.

Intervention studies

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TEACHING INTERVENTIONS IN OCCUPATIONAL HEALTH AND SAFETY DURING COVID19 PANDEMIC IN A SMALL EXPORTER AND PROCESSOR COMPANY OF HYDROBIOLOGICAL PRODUCTS IN PIURA, PERU

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Introduction In Peru there are many companies dedicated to fishing and exporting hydrobiological products that carry out their work informally. Most companies in this sector do not have occupational health and safety (OHS) systems. Accidents at work occur frequently but are not registered in the statistics of the Ministry of Labor. Workers also suffer from diseases such as musculoskeletal disorders, respiratory and skin infections, metabolic and cardiovascular diseases. Interventions of education and training workers and employers in OHS are becoming more important in small workplaces in developing countries as Peru, especially since the covid19 pandemic started. The purpose of the present study was to describe the implementation and its progressive improvement of teaching interventions during 3 years in a small exporter and processor company of hydrobiological products in Peru, including the covid19 pandemic, and to show its impact in the OHS system.

Materials & Methods The unit of this case report study was the indicators of teaching interventions as number of participants, professions, time working in OHS, education methods used and a knowledge assessment at the end of intervention.

Results Besides, it was analyzed the impact of the intervention on the frequency of accidents and illnesses in workers, on absenteeism and the indicators of workers’ health (such as frequency of diseases, workers under treatment, etc). The instrument used was Data collection sheet.

Results During 3 years, the teaching intervention implemented included ‘In Person’ and online sessions and tools. Some of the methods included Cases discussion, Role games, Performance-feedback, Video analysis and interactive games. The frequency of accidents was reduced in 20%. Absenteeism was reduced in 33%. Workers with diseases could follow medical exams and start their treatment.

Conclusion Teaching interventions had goods results in OHS system reducing accidents and absenteeism at this small company and improving medical surveillance in workers.

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RURAL WORKERS AND CANCER (RUCAN) STUDY A BRAZILIAN COHORT STUDY

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Introduction The pesticides used are broadly at the worldwide and that use could cause adverse effects at health human. The RUCAN Study is the greatest Brazilian cohort aimed to assess the pesticides exposure and its correlation to cancer incidence. Material and Methods In total, 2198 participants will be sampled from Barretos and São José do Rio Preto’s regions, between 18 and 74 years old and absence of cancer history. A questionnaire containing sociodemographic information, individuals occupational and health history has been applied using REDCap software. Furthermore, blood, oral mucosa and urine samples have been collected to acetylcilnolinoesterase determination, evaluation of the genomic instability, thought micronuclei frequency and telomere length (TL), and quantification of pesticides metabolites. The follow-ups in this cohort are expected to occur every 4 years.

Results At this moment, was included 197 participants, totaling 8.96% of cohort. The main herbicide reported was glyphosate, insecticide was fipronil and fungicide was copper hydroxide. In regarding diseases, 34.0% of the participants commented be hypertensive. Furthermore, 55.5% of them showed higher total cholesterol, being that 32.3% and 24.0% of the adults until 60 years exhibited overweight and obesity, respectively. Individuals presented 92.23 ± 45.45 pb/diploid genome as mean of TL that did not show effect by gender and current pesticides exposure. On the other hand, was observed weak correlations between TL with parameters of age (r = −0.216, p = 0.004) and pesticides exposure time (r = −0.386, p < 0.001). The quantification of metabolites of the most commonly use reported pesticides is being standardized by LC-MS/MS.