

Epidemiologic study of female worker's reproductive disorders among different occupational groups(I)

Abstract

Background

Many female workers start their jobs at mid-twenties or early-thirties, which overlap in time with marriage, pregnancy and delivery. In 2013, there were over eight million female workers in Korea, and there is ongoing trend that low birth rate, increasing rate of hard-to gestation and infertility problems. Our study aims to evaluate risks of reprotoxicity in female workers, investigate epidemiological traits of reproductive problems related with occupations, and accommodate preventive management plan for high risk groups.

Method

We analysed data of Work-environment Investigation 2014 by KOSHA to estimate how many female workers were could be exposed to reprotoxic materials and factors. We also obtained National Health-claim data of 2013 and analysed to show how much the reproductive health problems in female workers are there in each work field.

Results

There were 33,828 female workers who could be exposed to chemical or physical reprotoxic factors in manufacturing workplaces which have five or more workers. This is 6.78% of total female workers; 499,194 female workers. Physical factors including heat, cold temperatures and ionizing radiations could exposure to 7,025(20.77%), 5,855(17.31%), and 2,173(6.42%) female workers, respectively. Chemical factors including toluene, n-hexane, 2-etoxyethanol, N,N-dimethylacetamide, carbon monoxide and lead could exposure to 4,920(14.54%), 3,315(9.8%), 1,900(5.62%) 1,833(5.42%), 1,806(5.34%) and

1603(4.83%) female workers, respectively.

Female workers in manufacturing work places having less than five workers who could be exposure to chemical and physical reprotoxic factors were 992, which is 10.96% of total female workers from selected group. The most affecting factor was heat followed by toluene, cold temperature, hexane.

The results of National Health Insurance-claim data analysis showed that female workers' odd ratio for abortion(spontaneous and missed abortion) is 1.25(95%CI : 1.23-1.28), which is statistically higher compared to female dependents of the employment-based NHI program. Industry fields showed high OR for abortion and have over 1,000 cases of abortion were business support services(1.45, 95%CI 1.35-1.56), manufacture of electronic components, computer, radio, television and communication equipment and apparatuses(1.40, 95%CI 1.33-1.48), human health(1.36, 95%CI 1.31-1.41), other manufacturing (1.33, 95%CI 1.24-1.42), and etc.

The OR of all female workers compared to female dependents for habitual abortion, threatened abortion, SGA and placenta abruption were 1.28(95%CI 1.21-1.36), 1.40(95%CI 1.38-1.43), 1.19(95%CI 1.13-1.26) and 1.28 (95%CI 1.15-1.42), respectively. Industry fields indicated high OR for abortion compared to female dependents of the employment-based NHI program were real estate activities(1.93, 95%CI 1.54-2.42), other manufacturing(1.58, 95%CI 1.29-1.94), retail trade(1.45, 95%CI 1.22-1.72), and education(1.42, 95%CI 1.28-1.57).

Manufacture of motor vehicles, trailers and demitrailers(1.59, 95%CI 1.43-1.77), land transport ; transport via pipelines(1.55, 95%CI 1.40-1.71), human health(1.53, 95%CI 1.49-1.58) and other industry fields showed high OR for threatened abortion.

Our study investigated the epidemiological traits of Korean female workers' health problems related to reproductions. We concluded that female workers in certain industry fields are exposed to various kinds of reprotoxic agents. Furthermore, we suggested that work time itself might be considered as a risk factor for reproductive health problems, such as abortion, habitual abortion, threatened abortion, SGA and placenta abruption. Finally, we provided epidemiological evidences indicating female workers in several industry fields have higher OR for several reproductive health problems.

Keywords : Reprotoxicity, Work-environment investigation, Abortion