

### Supplementary file 3: Study analysis grid and scoring system

This scoring system results from an adapted version of the analysis grid of scientific articles [67] developed by the Maternity and Work Scientific Group of the *Institut national de santé publique du Québec*, a public health expertise and reference centre. A validity score of up to 17 was assigned to each study, for each outcome.

#### EXTERNAL VALIDITY

##### Country where the study was carried out (1 point)

- developed country (1/1 point);
- country where living and working conditions are considered to be quite difficult (0.5/1 point);
- developing country (0/1 point).

##### Period covered by the study (1 point)

- from 1976 to now (1/1 point);
- period extending from 1940 to 1975 (0/1 point).

#### INTERNAL VALIDITY

##### Participation rate (2 points)

- $\geq 80\%$  (2/2 points);
- 60-79% (1/2 points);
- $< 60\%$  or unknown (0/2 points).

##### Definition of pregnancy outcome (1 point)

- based on the criteria recognized by the scientific community (1/1 point);
- unusual definition of pregnancy outcome (0.5 / 1 point);
- not defined (0/1 point).

##### Measure of pregnancy outcome (1 point)

- documented in medical records, registers or birth certificates, according to doctor or midwife (1/1 point);
- reported by the mother (in studies where mothers are nurses) (1/1 point);
- reported by the mother if the outcome is spontaneous abortion (1/1 point);
- reported by the mother, for other outcome than spontaneous abortion (0.5 / 1 point);
- unspecified (0/1 point).

##### Definition of exposure to lifting (2 points)

- quantitative definitions for weight (1 point) and frequency (1 point) (2/2 points);
- qualitative definitions for weight (0.5 point) and frequency (0.5 point) (1/2 points);
- weight and frequency not defined (0/2 points).

##### Definition of comparison group (1 point)

- no lifting, or lifting no more than 7 kg (1/1 point);
- no heavy lifting, or lifting no more than 12 kg, or lifting no more than an hour per day (0.5 / 1 point);
- fairly frequent lifting, or occasional heavy lifting, or rare lifting of more than 10 kg (0.25 point);
- all workers of a study, or workers representative of the population, or workers lifting up to 20 kg (0/1 point).

**Measure of exposure to lifting (4 points)**

- documented prospectively from mothers during pregnancy (4/4 points);
- documented prospectively for at least half of the subjects (3/4 points);
- based on a job-exposure matrix constructed with the responses obtained from workers of the cohort during their pregnancy (3/4 points);
- when the results of a grouped analysis indicate that recall bias is unlikely even if the exposure was documented retrospectively (3/4 points);
- by questionnaire to occupational physicians (blind to the outcome of the pregnancy) (2/4 points);
- documented retrospectively from mothers after pregnancy (2/4 points);
- documented retrospectively, up to 7 or 8 years after the end of pregnancy (1.5 / 4 points);
- documented retrospectively up to more than 8 years after the end of pregnancy (1/4 points);
- according to job title (1/4 points).

**Control of personal confounding factors (2 points)**

Among the known risk factors for each adverse pregnancy outcome,[13] factors with an important confounding potential were selected based on their prevalence, the strength of their association with adverse pregnancy outcome and the plausibility that they could be associated with occupational exposure without being part of the causal pathway between exposure and adverse outcome.

- **Factors selected for SA:** maternal age, obstetrical history, smoking, some chronic maternal diseases (e.g. diabetes, high blood pressure), alcohol or drug consumption and maternal febrile disease

- adequate control of personal factors if at least 4 factors were controlled (1.5-2/2 points);
- partial control of personal factors if 2 or 3 factors were controlled (0.5-1/2 points);
- inadequate control of personal factors if 1 factor was controlled (0.25/2 points);
- no factor was controlled (0/2 points).

- **Factors selected for PTD:** maternal age, obstetrical history, smoking, some chronic maternal diseases (e.g. diabetes, high blood pressure), socio-economic level and height or weight of the mother before pregnancy.

- adequate control of personal factors if at least 5 factors were controlled (1.5-2/2 points);
- partial control of personal factors if 2 to 4 factors were controlled (0.5-1/2 points);
- inadequate control of personal factors if only 1 factor was controlled (0.25/2 points);
- no factor was controlled (0/2 points).

- **Factors selected for SGA:** maternal age, obstetrical history, smoking, some chronic maternal diseases (e.g. diabetes, high blood pressure), socio-economic level, height or weight of the mother before pregnancy and alcohol or drug consumption.

- adequate control of personal factors if at least 5 factors, including smoking, were controlled (1.5-2/2 points);
- partial control of personal factors if 2 to 4 factors were controlled (0.5-1/2 points);
- inadequate control of personal factors if only 1 factor was controlled (0.25/2 points);
- no factor was controlled (0/2 points).

**Control of other occupational exposures (2 points)**

- adequate if some other occupational exposures, including standing posture, were controlled (2/2 points);
- partial if at least one other occupational exposure, but not standing posture, was controlled (1/2 points);
- no other occupational exposure was controlled (0/2 points).