Impact of occupational exposure to disease, proximity to others during work and income on mortality from COVID-19.

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Data Sources

Data from the ONS analysis of occupational exposure to disease and proximity to others (based on the 2019 Annual Population Survey) and from the Annual Survey of Hours and Earning) was used to provide population denominator data. This provides information on the size of the population in each occupation, the % of the occupation who are BAME, the percentage who are female and the % who are aged 55 or over. For each occupation it also provides data on an index of the amount of contact with disease, the level of proximity to others in their work , and the average hourly wage.

https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationshavethehighestpotentialexposuretothecoronaviruscovid19/2020-05-11

These were merged with ONS data on numbers of deaths in males and females from COVID -19 in different occupational groups up to and including the 20th April 2020.
https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/coronaviruscovid19relateddeathsbyoccupationenglandandwales/deathsregistereduptoandincluding20april2020

Analysis

358 occupational categories were included in the analysis. These occupations were divided into quintiles according to hourly wage, disease exposure, proximity to others at work, % BAME and % over 55 years. The population in each of these quintiles was summed and the % Female was applied to calculate the number of men and women in each quintile. These population totals were used as denominators to calculate population mortality rates per 100,000 population. We also summed the numbers of deaths in males and females in each occupation to provide the numerator for these mortality rates. 95% confidence intervals around rates were calculated using Stata. Relative risks (and 95% confidence intervals) comparing those in the lowest and highest quintiles were calculated. Results are displayed using simple bar charts.

Results

There are very strong associations between male COVID mortality and high proximity occupation. These are particularly strong for those in low wage groups. Similar patterns are seen for the level of contact with disease in low wage occupations.
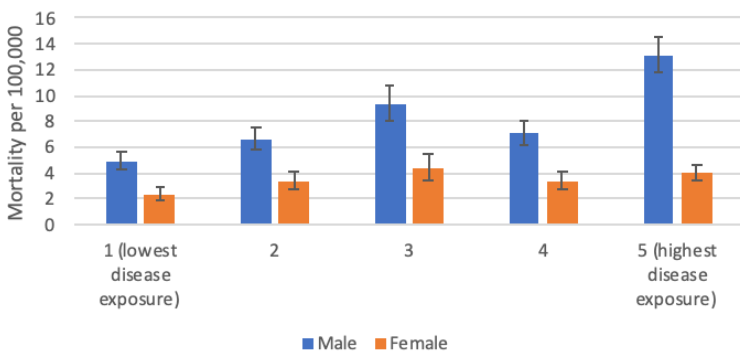
COVID-19 Mortality according to pay quintile of occupation. Males vs Females
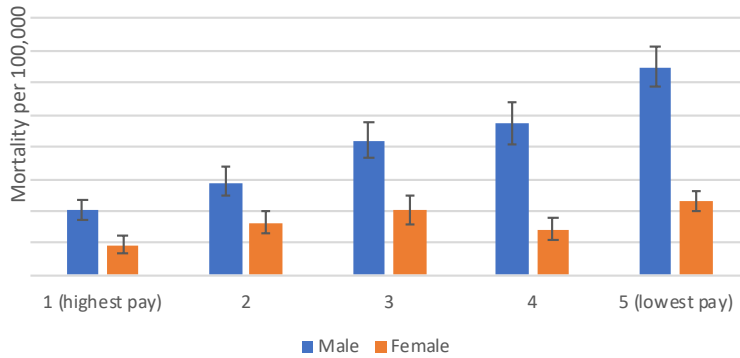
COVID-19 Mortality according to disease exposure quintile of occupation. Males vs Females
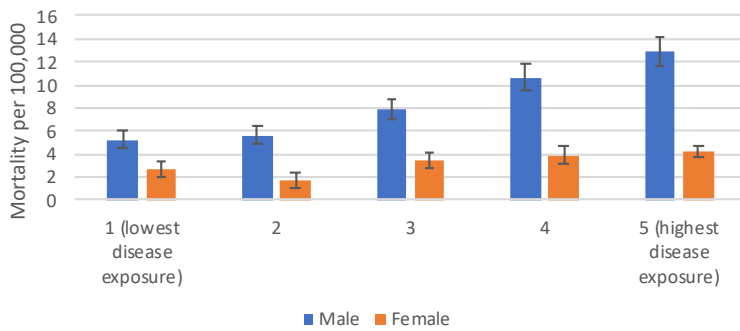
COVID-19 Mortality according to work proximity quintile of occupation. Males vs Females

The following graphs assess interaction between pay and proximity and between pay and disease exposure on mortality in males.

Interaction between pay, degree of work proximity and mortality

Male - Occupational exposure to disease, pay and mortality from COVID