Socio-economic inequalities in suicide: causation or confounding? A mortality follow-up of forty population censuses from twelve European countries

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Background Socio-economic inequalities in suicide remain substantial and persistent in most European countries. The mechanism driving these inequalities, however, remains obscure. Two causal mechanisms have been attributed varying degrees of importance: low socio-economic status may directly increase the risk of suicide (hereafter ‘causation’) or low socio-economic status and suicide may share confounders (hereafter, ‘confounding’). This paper aims to assess whether educational inequalities in suicide (EIS) are due to causation or to confounding.

Methods The DEMETRIQ study collected and harmonised register-based data on mortality follow-up of forty population censuses from fifteen Northern, Southern, Western, and Eastern European populations. More than 89,554 suicides were registered over 300 million person-years. Four tests of causation vs confounding were implemented. Test 1: whether a decreasing (increasing) EIS over the lifecycle supports confounding (or causation). Test 2: whether greater (lower) EIS in males than in females supports confounding (or causation). Test 3: At the country level, whether EIS is more related to the Gini income inequality index (causation) or to the proportion of suicides that take place among the younger age group (confounding). Test 4 applied an instrumental variable approach that exploits changes in the legislation on compulsory educational age to instrument educational status. Tests 1 and 2 were performed with multilevel Poisson Regressions (SAS), test 3 with linear regression, and test 4 used two-stage Poisson Regression (STATA).

Results For test 1, we found that educational inequalities in suicide decreased over the life cycle. The risk of suicide among the less educated as compared to the more highly educated declined from RR=1.85 (95% CI: 1.62–2.07) in those aged 35–39 to RR=1.27 (95% CI: 1.12–1.44) for those aged 75–79. Test 2 indicated that educational inequalities in suicide were systematic and of greater magnitude in males (all countries, RR=2.51, 95% CI: 2.44–2.58) than in females (all countries RR=1.32, 95% CI: 1.26–1.38). For test 3, EIS decreased with mean age of suicide (std Beta=-0.59, t-test=-5.0) and increased with the Gini coefficient (std beta=0.47, t-test=2.8). Test 4 indicated that there was no association between higher education and suicide.

Conclusion We found stronger support for the confounding explanation than for causation. Educational inequalities in suicide should be addressed by early targeting of vulnerable groups who struggle to complete their education.